The OIL and GAS JOURNAL
PRODUCING REFINING MARKETING

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Another Big Crude Production Decline

Average daily production in United States week ending Nov. 10, 2,198,550 bbls.

Readjustment of Prices and Definite Downward Trend in Output Indicates Improvement May be Expected From Now on

Loss in daily production in United States week ending Nov. 10, 54,102 bbls.

By Andrew M. Rowley

Following a decline of approximately 42,000 barrels a day in the production of crude petroleum in all fields of the United States during the week ended November 3, a further drop of 54,102 barrels daily was registered during the past week, thereby strengthening the belief that the overproduction situation was adjusting itself rapidly. The decline came in the natural course of development work and can, therefore, be regarded as significant of the general trend throughout the country. As during the previous week, the only increase reported was a 300-barrel-a-day gain in the Gulf Coast fields of Texas, aside from a 10-barrel increase in North Central Texas.

This substantial decline in production of crude petroleum is of especial interest to operators and all others connected with the oil industry because of the price readjustments placed in effect during the week by the major purchasing companies. Crude oil prices were reduced in all of the main areas with the exception of the Gulf Coast, California, Louisiana and Arkansas. These reductions started last Thursday when the Prairie Oil & Gas Co., the dominant purchaser in the Mid-Continent territory, reduced its posted quotations on the three grades in its schedule from 15 to 50 cents a barrel, the lower gravities being cut 15 cents and the higher 50 cents. The action of the Prairie was met immediately by other purchasers in the territory. On the same date, the Magnolia Petroleum Company, which has five grades in its schedule of prices, reduced its quotations from 10 to 15 cents a barrel.

On Friday, prices of crude in the fields of the Central West were reduced 25 cents a barrel and those in Wyoming and Montana from 30 to 40 cents a barrel. The reduction in eastern fields came on Tuesday of this week when reductions were made in the Pennsylvania grades of 15 cents a barrel.

Feel Bottom Has Been Reached

There seems to be a general feeling among producers that the bottom has been reached in the readjustment of crude oil prices. This feeling, with the announcement by the Prairie Oil & Gas Company that it will materially increase the amount of its purchases of crude and that from this time it will be in better position to take more oil from those from whom it buys, has gone a long way towards creating a better feeling as to the future among producing operators. As one operator stated: "The partial lifting of the proration order will aid greatly, even though prices were reduced at the same time. I would rather sell all my oil at a somewhat lower price than be compelled to store a great part of it and sell a small part at a little higher price."

The belief that prices of crude will not go much if any lower has also permitted oil men to plan their business ahead, because, previously, the feeling that a reduction in crude prices was imminent deterred oil men and others interested in the oil industry from taking steps affecting future plans of their business.

With reductions in crude prices having been made and production definitely on the downward trend, there is more reason now for operators to look forward with optimism to the future than for some time past. Some may differ from this opinion because of the low prices prevailing generally for crude, but close students of the situation who have considered the question as affecting the entire industry and the country at large instead of as it pertains to any particular section, have felt for a long time the salvation of the entire business at this time depended upon the industry's getting down to rock bottom and building up. It is believed now rock bottom has been reached and that all changes in the situation from now on will be for the ultimate benefit of all.

Production Definitely Declining

Any doubt which may have existed in the minds of operators that the production of crude petroleum throughout the United States was declining should be removed by the figures of the past two weeks which record a decline in that time of 96,000 barrels a day. This decline was not caused by any unusual condition in any field. It came in the natural course of events. The greatest drop during the past week was registered in California where the decrease amounted to 23,700 barrels daily as compared to the output for the previous week. The Powell Field in Texas was second, with a drop of 21,000 barrels daily. The Burbank and Tonkawa Fields in Oklahoma were responsible for the decline of about 4,000 barrels daily in that State as other fields showed slight increases, the drop in the two major fields totaling more than 5,800 barrels.

The Powell Field, which is regarded by operators as the direct cause of the reduction in prices of Mid-Continent crude, is continuing its rapid fluctuations in output, ranging during the past week from 280,000 barrels daily to 305,672 barrels as the record for Sunday of this week. The field has a potential production of around 326,000 barrels a day, many of the wells being pinched in as pipe line and storage facilities are not adequate to handle more than 300,000 barrels as a maximum.

Completions Hold Up Output

The history of the Powell Field has been one big surprise after another with predictions as to its extent and production rendered almost meaningless by developments, but there is no getting away from one fact of paramount importance. That is numerous wells of the gusher type must be completed each week in Powell to hold up the production of the field. The initial production of completions means comparatively little. For instance, one well completed last week had an initial output of 18,000 barrels and by the time a report of this completion was made, during the same week, the production had dropped to 4,300 barrels. Last week there were approximately 23 wells completed with an initial output of about 85,000 barrels. Yet the production of the entire field declined 21,000 barrels daily during the week.

There seems to be no doubt but that when the southwestern limits of the Powell Field are defined and the remaining locations drilled, the production of the field will drop quickly, or as operators say about the output of the field, "the bottom will drop out." There are about 60 wells now drilled to the sand with pipe set. There is territory in the southwestern part of the field proven and which will undoubtedly produce considerable oil when drilled. These are the factors which will hold up the production of Powell for some time. But wells there are drilled quickly, it requiring about 10 days to drill from the grass roots to the top of the sand. Consequently, while the stage is all set for the holding up of production to a large figure for some time, the basic features of the field are such this vast production cannot continue for any great length of time.

When the production of Powell does begin to slump rapidly, the entire oil situation of the Mid-Continent territory will be changed. At present Powell is the only competitor for California crude on the eastern seaboard. Remove Powell as a factor, and the time is not far off when it will be so removed, and Mid-Continent operators will be able to breathe more freely than they have since early last summer when Powell became the factor regarded as the one great menace in the overproduction situation.

PRODUCTION IN THE UNITED STATES

Estimated daily average production in the oil fields of the United States for the week ended November 10, and a comparison with the previous week follows:

Field	Nov. 10	Nov. 3
Oklahoma—Northern Fields:		
Tonkawa	46,097	48,533
Burbank	85,308	88,739
Other Osage Fields	26,450	26,385
Cushing and Shamrock	24,350	24,360
Bristow and Eastern Bristow	48,100	47,450
Northern Miscellaneous	84,735	83,225
Southern Fields:		
Healdton	17,245	17,240
Hewitt	24,175	24,515
Southern Miscellaneous	24,220	24,175
Total Oklahoma	380,680	384,622
North Louisiana	57,030	57,690
Arkansas—		
El Dorado	10,780	10,660
Smackover Light	17,690	15,995
Smackover Heavy	83,925	86,785
Other Arkansas Fields	9,300	10,805
Total Arkansas	121,695	124,245
North Central Texas	112,365	112,355
East Central Texas (Mexia, Currie, Corsicana, Powell)	337,800	358,850
Kansas	71,010	71,025
Total Mid-Continent Area	1,080,580	1,108,787
Gulf Coast	96,155	95,855
Eastern	109,275	109,300
Wyoming-Montana	149,240	151,710
California—		
Santa Fe Springs	233,000	235,000
Long Beach	238,000	256,000
Huntington Beach	78,000	80,000
Torrance	18,000	16,000
Remainder State	196,300	200,000
Total California	763,300	787,000
Total United States	2,198,550	2,252,652

Decrease, 54,102 Barrels

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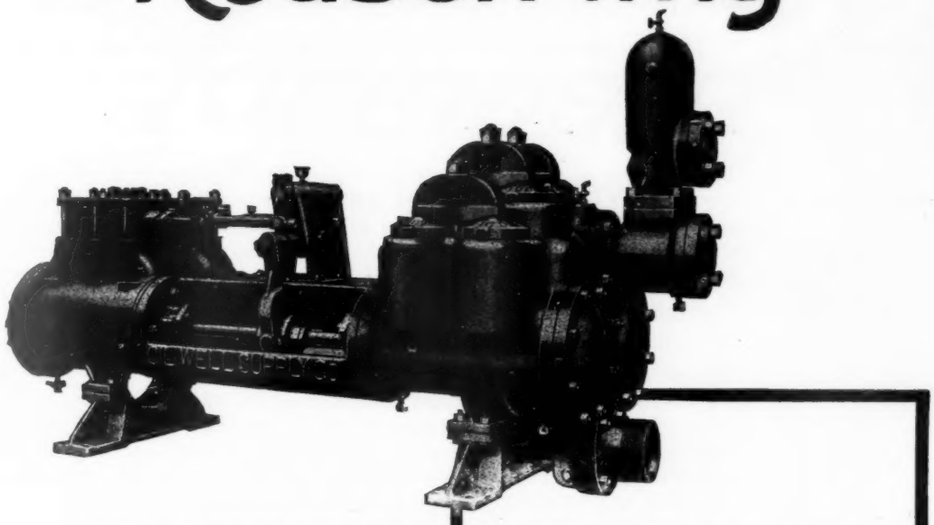

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GOOD ROADS AND GASOLINE

The remarkable increase in the number of automobiles manufactured has been the most encouraging feature of an otherwise disappointing year in the oil business. It has shown that we are still far from exhausting the demand for gasoline. Automotive manufacturers, moreover, predict that next year will surpass this year's record. The saturation point, so often discussed, is not yet discernible.

There is, however, another phase which is of particular interest to the oil industry. It is suggested by a recent address of I. W. Fuqua in which he stated that the gasoline production of 1923 will reach probably 7,000,000,000 gallons to supply the demands of 14,000,000 motor vehicles using an average of 450 gallons annually. But in California the average consumption of gasoline, he pointed out, will be 750 gallons a year. In northern California it is 550 gallons; in southern California, 1,100 gallons, and in Los Angeles, 1,300 gallons.

This exceptional consumption of gasoline in California is due to good roads and favorable weather. California may have the advantage in climate but the impetus given to gasoline consumption by good roads there must in time be followed in other sections of the country. Motorists will be lured to new roads when, perhaps, satiated with the old, and the greater the variety of tours or trips made possible the greater, of course, will be the consumption of gasoline. Besides the assurance of good roads will encourage longer trips that are not now considered because of the uncertainties and difficulties of travel.

It has been estimated that we have today 300,000 miles of improved roads in the United States. Many of these, too, may be but imitations of improved roads, temporary substitutes or so out of repair as to belie the name. Yet the development of a highway system has been the work of the past 20 years. Judging by the programs prepared by the Federal Government and the States and local committees this achievement will be far exceeded in the next 10 years. And with the multiplication of good highways will come inevitably a still greater increase in the demands upon the oil industry for motor fuel and lubricants.

NOW IS THE TIME

The regular session of Congress in any year before a presidential campaign is notoriously devoted to the manufacture of campaign ammunition. The session which will open on the first Monday in December will be exceptionally political because of the exceptional political situation caused by the death of President Harding and the uncertainty in the major parties over the nominations and issues.

Much of the time of Congress, unless all signs and precedents are at fault, will be devoted to manufacturing or dodging issues. And the best way to dodge an undesirable issue, any politician will say, is to create another to distract popular attention. That is where the campaign against the oil industry is expected to come in.

According to political tradition the oil industry is always a safe target. The agitation over the price of gasoline, although that product is now selling at or below pre-war prices, has been so studiously fostered that the politicians figure it can always be depended upon to deceive the people once more. The scenery has all been set, the actors are being trained letter-perfect in their parts, and when the curtain goes up next month the country and the oil industry may look for another performance of "busting the octopus."

It is a performance of which the petroleum industry is becoming very weary and just at this moment, with the oil business emerging from its most disastrous experience, ought to provoke resentment and resistance. The fight this time, so far as the oil industry is concerned, should be a fight to a finish. There must be an end to these periodical attacks upon an industry desperately striving to cope with unforseen and unforseeable conditions in its efforts to maintain the supply of the motor fuel and lubricants upon which the entire industrial machinery of the country depend.

Now is the time to throw up impregnable defense works against the threatened assault of Congress upon the petroleum industry. Every possible avenue of attack should be studied and preparations carefully laid for the contest.

To succeed it must be backed by the entire industry, by every man, partnership and corporation in the business. The issue of Governmental interference is a serious one, a paramount one. Before the peril of such a menace all minor differences between one branch of the industry and another become of comparative unimportance. We must close up the ranks in the face of a common danger.

Every oil man knows what Governmental interference has done to the railroad business and to every other business in which politics has meddled. Once inaugurated there is no possible method of estimating where it will end. No branch of the business can expect that political restriction is going to stop at regulating any other branch. If it is once begun it is certain to spread through every department. That has been the history of political interference everywhere. It grows on what it feeds upon.

There is not a business in the United States holding a better claim for immunity against Governmental regulation or control than the oil industry. It is an industry that is dependent absolutely upon initiative and enterprise, to both of which any sort of Governmental control would be fatal.

But this fact is not sufficient. The position must be vigorously defended. All the required information, facts and arguments with which to resist the invasion should be marshalled in ample time to meet the political onslaught. To this end there should be a convention of the petroleum interests, embracing all elements and branches in the industry, calling for concerted and representative action.

Its purpose should be to secure the best thought and to build a solid and unshakable line of defense. The responsibility of conducting the defense should not be passed over to a few willing workers, allowing the issue to stand or fall on their labors alone. There is too much at stake. The situation is grave and requires serious consideration.

The battle must be fought out before the court of public opinion. The oil industry must appeal from the politicians to the people, before and not after Congress has acted. The Oil and Gas Journal believes that the industry has a case that can be presented to the public in such a way as to win and hold popular approval against political assaults for all time. The time to formulate that case and put it before the people is right now, on the eve of the assembling of this Congress which seems bent on assailing the industry.

Let the leaders in the industry meet and make out their case and take steps to place it in the hands of the people. And there is no better or quicker method of securing that contact with the public most directly interested than that suggested in these columns, through the medium of the filling stations which are visited by the 13,000,000 daily users of our products.

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DRESSER COUPLINGS

Group 3 Refined Market Unsettled

Crude and Tank Wagon Reductions Disturb Market Already Soft With Exception of Kerosene. Neutrals Priced Lower

By C. O. Willson

Reductions in crude and tank wagon prices in areas which both directly and indirectly affected Group 3 during the past week combined to bring one of the most hectic periods of the year to its refined markets. As was to be expected in the face of these developments the markets generally are softer and unsettled. It will probably be several days at least before it will be able definitely to determine just what the final reaction will be to the changes which on the one hand involve the crude supply of Group 3 refiners and on the other the retail markets through which these refiners dispose of the bulk of their gasoline output.

The two changes of the week were the reductions in the crude supplies of this group by the Prairie Oil & Gas Co. and the Magnolia Petroleum Co., which were met by other major purchasing companies and the general 2-cent gasoline tank wagon reduction affecting practically all of the Standard Oil Co. of Indiana territory consisting of 10 States in the Middle West. The new Prairie schedule of three grades from 75 cents to $1.25, amounting to reductions of from 15 to 50 cents, and the Magnolia schedule of five grades is from 40 cents to $1.25, involving reductions of from 10 to 15 cents with no changes in the highest grade. These crude and tank wagon changes together with those affecting other areas are given in detail in the market pages of this issue.

Crude Cut Expected

The crude reduction which has been expected for weeks, announced on Thursday of last week, was an encouraging development in so far as a majority of refiners of this group and the entire area affected is concerned. As has been explained in these columns several times recently, the previous crude scales meant the operation of a majority of the plants at a substantial loss due to the low price structure for refined products. The new crude prices, with no lowering of the prices for refined products except the marginal contracts for fuel oil which are based on the posted crude prices, would probably have permitted a majority of the plants to break even in their operations or show a small profit. In a few cases at least plants would still have been operated at a loss.

Hardly had the refining industry begun to experience a feeling of relief when the Standard of Indiana on Saturday announced its gasoline tank wagon reduction. This action was a surprise second only to that occasioned by the action of the Indiana company when in August it made a general gasoline tank wagon reduction of 6.6 cents. Previous to the reduction the margin between the tank wagon prices of the Indiana company's territory and the Group 3 refinery price on gasoline was not 2 cents out of line with the average margin in normal years and was considerably less than the Indiana company maintained for weeks during the spring and summer months when the refinery prices were slumping weekly. What brought about the 2-cent reduction is somewhat of a mystery. There have been several "price wars" in the Indiana company's territory but they have been local in scope and many have been settled amicably recently. Expressions from refiners and marketers in this section indicate a general belief that the Indiana company has recently become aware of formidable competition within its own territory and is more than meeting it.

Refiners Worse Off

Regardless of the causes of the action there can be no doubt as to the results in so far as the refiners of Group 3 are concerned. As previously stated, the full effects of this action in the refinery markets are not known but enough injury has already been done to back up the statement of one refiner who said Monday that "We refiners, through the reduction in the Standard of Indiana territory, have already lost more than we gained through the crude reduction and we are now worse off than we were a week ago."

The most drastic effect, of course, of any change in the Standard of Indiana tank wagon prices is the lowering of the marginal contract prices. It has been estimated that Group 3 refiners dispose of 50 per cent of their gasoline of the New Navy grade through these marginal cases. The Chicago tank wagon will probably give an idea of a general situation which confronts the refiners.

The Chicago tank wagon price is now 12 cents. Based on a 4½-cent margin to the jobber and 2.376-cent freight rate from Tulsa to Chicago, it can be seen that such a contract would net the Tulsa refiner 5.124 cents per gallon at his plant. The latest tank wagon reduction was 1.4 cents in Chicago but 2 cents in most of the Standard of Indiana territory, so that many contracts net the Oklahoma refiner less than 5 cents. One sales manager, with accurate data at his disposal as to the terms of these marginal contracts, estimates that they will now net the Oklahoma refiners on an average of from 4¾ to 5 cents a gallon. The importance of these reductions to such concerns as Cosden & Co., which sells the bulk of its gasoline output through these contracts, requires no further explanation. This loss alone in several instances will more than offset the advantage accruing from the 15 to 50-cent reduction in crude prices.

Hit by Crude Cut

The other direct and immediate loss to the refining industry of this group brought about by the changes of the past week was the lowering of the prices received for fuel oil sold under contract based on the price of crude. A majority of the contracts are based on 60 per cent of the posted price of crude oil. The accepted basis since the Prairie announced three schedules was for the 33 to 39.9 grade. This price is now $1, so the fuel contracts are netting the refiner 60 cents. This represents an 18-cent reduction from the 78-cent price when the basic crude price was $1.30. To the refiner who disposes of practically all of his fuel oil by contract the reduction represents a loss which, due to the low gasoline prices, largely offsets the advantage accruing from the reduction in the crude price. It is apparent that with gasoline prices at their present low levels, crude reductions are not a great benefit to the refiner who sells 35 to 40 per cent of his bulk output at a price which decreases with the lowering of the crude prices.

Gasolines and Blends

In addition to the direct effect on prices based on marginal contracts just explained, the spot market on gasolines is soft. This may be due to the crude and tank wagon reductions, as some state, but it is also true that the demand for gasolines from Oklahoma plants has been sluggish during the past month and there was a lowering of prices before the crude and tank wagon reduction was announced. The tank wagon reduction by some, in fact, is considered a result of the inability of Mid-Continent to maintain a firm price for New Navy.

Up to this writing the New Navy price was holding better than was expected by many when the tank wagon reduction was announced. The low refinery price when the tank wagon reduction became effective was 6¼ cents and there has been comparatively little material sold under that price since. Some business usually for resale has been placed at 6⅛ cents. Several buyers are in the market and are willing to pay 6 cents

(Continued on Page 111)

REFINED MARKET BAROMETER

A downward adjustment in crude oil prices in a majority of the fields east of the Rocky Mountains and gasoline tank wagon reductions affecting approximately 50 per cent of the entire consuming area was reflected in generally soft refined markets throughout the United States during the past week. Straight run gasolines, blends, natural gasolines and fuel oils were lowered in price in most refining centers. Distillates were not so strong as they have been for several weeks but prices were generally firm. Neutrals were reduced in some areas but unchanged in others. Kerosene demand exceeded the supply with higher prices in some sections.

Mid-Continent—Crude reductions affecting all areas with the exception of north Louisiana and Arkansas, coupled with tank wagon reductions in Standard of Louisiana territory, unsettled market already generally soft with the exception of kerosenes. Prices on all grades of straight run gasolines and blends ¼ to ½ cent lower. Kerosene strong with higher prices where there were any changes. Fuel distillates weak with no important price changes. Natural gasolines slumped another ½ to ¾ cents with less demand. Fuel oil weak with lower prices in some areas. Neutral prices lower.

Atlantic Seaboard—Both domestic and export market on gasoline generally weaker. Tank wagon reductions reflect lower prices at the refineries. All gasoline export prices from ½ to 1 cent lower. Kerosene stronger and some refiners have advanced their quotations. Good demand for fuel oils and distillates. Improved demand for lubricants. Gain in receipts of crude and refined products at Atlantic Coast ports.

Pennsylvania—Gasolines weak and prices were reduced on all grades. Good demand for wax and lubricants and prices on these products are generally firm. Kerosene demand not so strong and prices have been lowered on some grades. Fuel oil much softer. Reduction in Pennsylvania crudes expected to result in still lower prices.

Chicago—Mid-Continent crude and Standard of Indiana tank wagon reductions disturb market. Believed that prices on all products will be lowered. Gasoline weak with generally lower prices. Fuel oil sluggish with prices reduced. Kerosene strong and prices advanced from ⅛ to ¼ cent on all grades. Good demand for lubricating oils for this time of the year.

Gulf Coast—Strong demand for zero cold test oils and generally higher prices are expected by the trade. Some plants are unable to fill orders. Decline in Gulf Coast crude production makes it increasingly difficult for refiners to secure crude supplies.

SOUTH DAKOTA INDEPENDENTS TO ENJOIN GOVERNOR M'MASTER

SIOUX FALLS, S. D., Nov. 13.—Injunction proceedings designed to prevent Governor McMaster from operating State filling stations in the principal cities of South Dakota, to sell gasoline at 16 cents per gallon in competition with the Standard Oil Co. and the independents, who, last Saturday, raised their prices to an average of 18 cents per gallon throughout South Dakota, may be the next development in the renewed gasoline war which Governor McMaster precipitated, when he declared in an Armistice Day address in Sioux Falls that the price of 18 cents was unfair and unwarranted and announced that the State would start selling gasoline at 16 cents.

A group of independent dealers in Sioux Falls intimate that they will apply for an injunction restraining the Governor from selling gasoline at reduced prices and using State money the independents and others pay in State taxes for the purpose of "freezing out" the independent and other dealers. The question by what right the Governor will use State funds to buy gasoline for the purpose of selling it at retail in competition with Standard and independent dealers promises to get in the court, the contention being that, without authority of the Legislature, the Governor has no legal right to take money from State funds for the purchase of gasoline in large quantities in the absence of the Legislature having made an appropriation for that specific purpose.

The State filling station at Mitchell was retailing gasoline today at 16 cents, but reports from that city were to the effect that the State station was not "rushed with business." So far, the Standard Oil Co. has refused to issue a statement as to what action it would take to counteract the latest move of the Governor.

While in Sioux Falls today Governor McMaster announced that the State will begin selling gasoline tomorrow morning at the South Dakota penitentiary in Sioux Falls at 15½ cents per gallon, and that before the week is over there will be State oil on sale in the principal cities of the State at 16 cents per gallon, using Mitchell as the base, the price varying according to the differential in freight.

In a statement issued late in August Governor McMaster denounced the independents exclusively for having robbed the users of gasoline prior to the inauguration of his gasoline price war on August 7, but in his statement today he charges that both the independents and Standard Oil have for many months taken unwarranted and unjustified profits which, he terms, "may be rightly classified as highway robbery."

Chemistry of Combustion Oil and Gas

Relative Economy in the Industrial use of Coal. Oil and Gas as Fuels. Ratio of British Thermal Units Variable

By Letson Balliet, E. M.
Research and Efficiency Engineer With the Moore Shipbuilding Co. During the War
Written Exclusively for The Oil and Gas Journal. Compiled from Fuel Research During the War With All Tables Herein Previously Unpublished

FOREWORD

There is nothing mysterious nor anything bordering on the occult about any positive science. The scientist cannot make laws; he can only search to find the positive and definite laws of nature. Having found them he should be able to lay them down in words that are clear and positive. Language is made for the purpose of expressing thought and not for the purpose of obscuring it. I have tried to express my thoughts in the following article in such a manner as to be within the understanding of those who have not had the benefit of a technical education.

Our elementary chemistry stated "A fuel is any substance composed of hydrogen or carbon, or any combination of hydrogen and carbon that will unite with oxygen and give off heat and light as a result of the union." This is not quite correct, as we afterward learned, for there are some other elements that will "unite with oxygen and give off heat and light as a result of the union," for example, sulphur, aluminum, iron and some others. Sulphur is found in small quantities in most petroleum deposits and in the residual fuel oils.

Coal frequently has small quantities of sulphur present in combination with iron or hydrogen. Manufactured and natural gas will show small percentages of sulphur on careful analysis, but never in sufficient quantities, in any of these fuels, to be worth considering for its heat value. Its odor is sometimes offensive, and it has a detrimental effect upon metals that are being heated.

Coal, Oil and Gas

Industry is often required to decide the question of economy between coal, oil and gas as fuels. The management is easily convinced by the purchasing agent that the fuel having the greatest number of b. t. u. (British Thermal Units) for one dollar is the most economical. Depending upon its use, this may or may not be so.

In discussing this subject it will be necessary for me to assume an arbitrary price as illustrative. Prices cannot be the same in all localities, but it will be easy for any clerk or official to sustitute local prices for the arbitrary prices or to find the per cent increase or decrease over the prices I have used, and add or subtract that per cent from the column headed "B. T. U. for $1."

Table of Fuel Costs and Possible Temperatures

Good coal, per pound, B. T. U., 13,000 to 14,000 at $10 per ton; B. T. U. for $1, 2,600,000 to 2,800,000; flame temperature control, 1600° F. to 3000° F.

Fuel oil, per pound in California, B. T. U., 18,000 to 18,500, at $1 per bbl., B. T. U. for $1, 6,000,000 to 6,300,000; flame temperature control, 1600° F. to 3000° F.

Natural gas b. t. u. per cubic feet, B. T. U., 900 to 1,100, at $1 per M cubic feet, B. T. U. for $1, 900,000 to 1,100,000; flame temperature control, 900° F. to 5100° F.

Manufactured city gas, B. T. U., 500 to 600, at $1 per M cubic feet; B. T. U. for $1, 500,000 to 600,000; flame temperature control, 900° F. to 4600° F.

Electricity per K. W. H., B. T. U., 3,412, at 1 cent per K. W. H.; B. T. U. for $1, 341,200; flame temperature control, anything from 32° F to 10,000° F.

With coal arises the necessity for kindling, and the destruction of many B. T. U. preliminary to raising the temperature to its required heat, and many heat units are wasted in letting the fire die out after the heat is finished. There is also the fact, that in order to have complete combustion it is necessary to have an excess of air, or with a shortage of air get incomplete combustion. Excess air creates a cooling effect on the flame, while incomplete combustion fails to get all the value from the coal, and either will result in a heat loss, and a consequent money loss. Fuel oil is not subpect to the time loss of kindling, as the flame heat is immediately reached, but oil fires are always severely oxidizing fires and are subject to the same losses of temperature by excess air in the fire box or combustion chamber, or to incomplete combustion if insufficient air is supplied.

Oil Burning

Oil used for fires, no matter how finely the oil may be atomized, whether sprayed by steam or air—hot or cold, or mechanically sprayed—is still oil. It is not a gas. Each tiny globule of oil, as propelled into the combustion chamber, must float on and on in a draft or blast of air, becoming smaller and smaller as the oxygen unites with it—until it is all consumed. Such a fire must have an excess of air, for it is not possible for the globules of oil to grasp every molecule of oxygen. The more air that is sprayed with the oil the shorter and hotter the fire (within limits of not too great an excess). The less that is sprayed with the oil the farther the globules must float away from the burner to find its oxygen. The farther it goes the cooler the flame becomes until the fire may even go out and deposit the carbon unburned, or pass off as smoke. The bigger the space heated, or the bigger the combustion chamber or area, the lower the temperature of the fire per B. T. U. Compare, a stove in a closet and the same stove and fire in a big auditorium. The same heat is there, but the temperature is lower by being diffused throughout a larger chamber.

Economy of fuel oil depends upon the thermo-chemical engineer designing the combustion chamber and burner to supply the exact heat required, throughout the least space, with the least required oil for the greatest capacity of output of the product. Cement, lime and magnesite furnaces are often flagrant wasters of fuel accompanied by loss of possible production.

It might be well at this point to say that the most powerful agent known to the chemist is oxygen. It is hungry and greedy at all times, ready to unite with many things for its destruction. I might also say that fire never destroys anything. It is the oxygen (of the air) uniting with wood (carbon) or a burning building that destroys it. The fire, or flame that you see is the result of the union of oxygen with the wood, not the cause. The air is 21 per cent oxygen and 79 per cent inert gases, mainly nitrogen. For practical purposes it is often figured as 20 per cent oxygen and 80 per cent nitrogen. Sometimes worded "the air is one part oxygen in five."

Cools Off the Flame

Under these conditions the inert nitrogen does not burn, nor change. It simply dilutes the oxygen, cools off the flame, absorbs heat, occupies space and passes off heated with the stack losses. Pure oxygen fed to gas fires makes a hotter fire than air, because the cooling effect of the nitrogen is not present. The purer the oxygen the hotter the flame. Increasing the per cent of oxygen in furnace air increases the temperature of the flame. This is called "enriched air" and may be enriched from 20 per cent to 30 per cent, 40 per cent or even to 100 per cent pure oxygen for some purposes. Some industrial practicaes are using enriched air.

To Obtain Complete Combustion

Carbon contains 16,000 B. T. U. per pound.

One pound of carbon requires 29.93 cubic feet of pure oxygen.

One pound of carbon requires all the oxygen from 151.2 cubic feet of air.

One pound of carbon requires all the oxygen from 11.52 pounds of air.

One pound of carbon requires the oxygen from 33 cubic feet of enriched air containing 90 per cent oxygen.

One pound of carbon requires the oxygen from 37.5 cubic feet of enriched air containing 80 per cent oxygen.

One pound of carbon requires the oxygen from 43 cubic feet of enriched air containing 70 per cent oxygen.

One pound of carbon requires the oxygen from 50 cubic feet of enriched air containing 60 per cent oxygen.

Bearing in mind that the normal air is 79 per cent inert gases, mainly nitrogen that will not burn, you will understand the following table. The highest heat is obtainable with pure oxygen, where there is no inert gas to be heated. It is also obvious that the exact amount of air, will have less inert and unburnt gases absorbing heat than other volumes where an excess of air is supplied. The more excess air the greater the cooling effect on the flame temperature.

Flame Temperatures Obtainable With Common Gases When Burned With Pure Oxygen and With Air, Degs. F.

Exact requirement pure oxygen for complete combustion, acetylene, 6,000; hydrogen, 5,744; gasoline, 5,050; California oil gas, 4,600; natural gas, 5,100.

Exact requirement of air to furnish oxygen for complete combustion thoroughly mixed, acetylene, 4,600; hydrogen, 4,400; gasoline, 4,000; California oil gas, 3,600; natural gas, 4,240.

One and a half times air required to furnish oxygen for complete combustion, acetylene, 4,000; hydrogen, 3,860; gasoline, 3 515; California oil gas, 3,300; natural gas, 2,500.

Double the amount of air required to furnish oxygen for complete combustion, acetylene, 3,100; hydrogen, 2,970; gasoline, 2,710; California oil gas, 2,400; natural gas, 2,600.

Three times the amount of air required to furnish oxygen for complete combustion, acetylene, 2,000; hydrogen, 1,840; gasoline, 1,850; California oil gas, 1,500; natural gas, 1,700.

Completely combustible mixtures are possible only with gas fuels, hence solid and liquid fuels for complete combustion must have an excess of air, and are, therefore, severely oxidizing flames and detrimental to many metallurgical practices.

"Completely Combustible"

By the term "completely combustible mixture" is meant a gas fuel mixed with air (or oxygen) in the exact ratio, so that every atom of gas is in actual association with its chemical requirement for complete combustion—and without excess. This is mixed and stirred up together, before ignition, either in a mixing machine, or in a mixing chamber in the approach to the burner or torch tip. Completely combustible mixtures contain all the requirements for combustion in the mixture, and can be burned under water, or in sealed chambers. Gun powder, dynamite, etc., are combustible mixtures and, the rate of flame propagation being very rapid, they are called "explosives" on the theory of "instantaneous combustion" being an explosion.

The ordinary kitchen stove strikes back and pops when you turn it out, because a few inches of pipe is full of combustible mixture, having sucked air in with gas as the gas passes to the burner. The speed of the mixture through this pipe is faster than the flame can travel backward, until you turn off the gas and stop the travel. Then the flame comes back and burns up the mixture in the tube to the point where you turned it off.

Rate of flame propagation can be compared to a row of dominoes stood on end. Knock one over and it falls against the next, which in turns fall against the next, and so on until the whole row falls down. If, however, these dominoes are on a board and the board is moving along as fast as the dominoes fall backward, the falling domino will always be over the same spot. So with a burning combustible mixture. The tendency is to follow the mixture backward, but if it moves forward faster than flame can ignite the gas particles behind it, the flame stays at one spot until you stop the pressure by turning off the gas.

Temperature of Ignition

Temperature of ignition—is the heat required to start or kindle. A burning cigar in the bright part of the puff, has a temperature of 1,600°, but if you undertake to light a cigar with a redhot poker or bar of iron it has to be at least 900° before it can be done, and then with difficulty. To efficiently kindle a coal or fuel oil fire it requires 1,600° in some brightly burning spot, to start one molecule to combine with oxygen. The burning heat cannot be less than the temperature of ignition.

Our elementary chemistry taught us the difference between the oxidizing and the reducing flame. An oxidizing flame is one in which an excess of oxygen is carried. The oxygen becomes heated in the flame—but as there are no fuel molecules for this excess to make union with, it attaks the iron or metal or anything else that will accept its affinity, and oxidises it. The reducing flame is exactly the reverse, it hasn't enough oxygen for all the fuel molecules. The hot fuel gas grabs all the oxygen it can find and will even take oxygen from things in the fire. For example, if iron rust (oxide of iron) is in reach the hot carbon will take the oxygen in the iron reducing the iron rust to metallic iron. A neutral flame would have just enough oxygen and no more and would be neutral. It is mechanically and humanly possible to reach such conditions accurately only with gas fuels, hence, the economy of fuel depends upon the results desired and the engineers' ability to design the proper equipment.

Fuel Oil Data

The principal combustible elements in fuel oil are carbon hydrogen and a small quantity of sulphur. To obtain complete combustion of fuel oil:

11.52 pounds of air are required for every pound of carbon.

35.5 pounls of air are required for every pound of hydrogen.

4.35 pounds of air are required for every pound of sulphur.

By analyses of the fuel oil, the per cent of C, H, and S per pound of oil will determine the amount of air required for complete combustion. Thus for a fuel oil 86 per cent carbon, 11 per cent hydrogen and .8 per cent sulphur (balance noncombustible—moisture and impurities) 15 pounds of air will furnish very close to

(Continued on Page 119)

May Offer Chester Grant to Europe

Split in Company Over Plan to Sell Stock to Public, Following Failure to Secure Backing of American Bankers

NEW YORK, Nov. 10. — Differences of opinion as to the methods of financing the Ottoman-American Developing Co., which is endeavoring to develop the Chester concessions in Turkey, have resulted in wholesale resignations from the board of directors. Frederick S. Blackall, who has been one of the chief factors in shaping the policy of the company since it took over the concession from Rear Admiral Colby M. Chester, who obtained the original concession from the Turkish Government, is one of the officers who resigned. At the same time he ordered the company to vacate its office, which was maintained in Mr. Blackall's suite in the Woolworth Building. F. B. Potter, a member of the New York Stock Exchange firm of Pouch & Co., also resigned. Others reported to have severed their connections with the company include Major Gen. George W. Goethals, H. C. Sheridan of Washington and A. S. Roberts, an associate of Mr. Sheridan.

Cause of the Split

The split-up in the ranks of the officers of the company is said to have been entirely due to the methods adopted at a recent meeting of the board of directors in the proposed sale of $1,000,000 of capital stock of the company, consisting of 10,000 shares of the par value of $100 each. Announcements covering the plans of the company in connection with the proposed sale of stock and the method of financing the concession have been the cause of the discussion.

It was reported upon several occasions that Wall Street financial interests had taken the matter in hand and that the financial requirements of the company were assured. Each of these reports, however, were emphatically denied in the quarters mentioned as being interested in the concession, and finally officials of the company admitted that the necessary funds were not in sight and that arrangements would have to be made outside of the Wall Street district. Failure of those associated with the company to interest large capitalists in the concession is understood to have been responsible for the attempt of those remaining in the organization to sell the stock in small quantities to small investors in all parts of the country. This method of selling stock is responsible for the break which developed among the directors.

Director Explains

Mr. Potter confirmed the report of his resignation from the company.

"I have resigned as a director of the Ottoman-American Development Co. because at a recent meeting of the board it was proposed to start a public campaign to sell stock of the company held in its treasury for capital purposes," he said, "I felt that the concession was in no shape at present to justify the sale of stock to the public." He added that he had become interested in the organization only as a person friend of K. E. Clayton-Kennedy, who was originally associated with Admiral Chester at the time he obtained the concession.

The resignation of Mr. Blackall was confirmed at his office. Mr. Blackall is out of town, but it was said at his office that his resignation was due to the stock selling campaign, and that he had decided to let the real owners of the concession manage the affairs of the company.

Admiral Chester, as a result of his obtaining the concession, from the start has been the prime mover in the affairs of the organization, the other owners who have become associated with Chester being Henry Woodhouse, W. E. D. Stokes, Charles A. Barndard and K. E. Clayton-Kennedy in addition to other prominent individuals both in this country and Canada. Shortly after the organization of the Ottoman-American company, it was reported that 51 per cent of the company's stock had been placed in the hands of a voting trust committee, for the purpose of assuring American control of the company at all times, but it is now understood that there has been a hitch in this proposed arrangement because numerous of the large stockholders failed to sign their stock certificates and turn them over to the voting trust committee.

Counsel's Statement

Horace G. Knowles, counsel for the Ottoman-American Development Co., issued a statement in which he said: "It is my understanding that these gentlemen did not want to continue in office because of the various disagreements that arose over the various views held by various directors and officers regarding the offers made by certain financial groups." Mr. Knowles said that documents turned over to him showed that a British group of financers had offered to underwrite securities of the company to the extent of 10,000,000 pounds sterling. Several groups of French and Italian bankers also offered to participate in the financing of the company. He also said that upon taking over the legal and financial details of the company he was warned that he would have difficulty in meeting the many divergent views held by various directors.

The company will be forced to seek capital from European interests if Americans fail to subscribe the funds needed to carry out plans already agreed upon, according to Mr. Knowles.

In commenting upon the action of the five directors who resigned, Mr. Knowles said these directors were not altogether blameless for the present condition of the company's finances. It appears, he said, that "the directors who resigned wanted something for nothing. They could not expect to get stock merely for the use of their names. They accepted positions upon the board of directors, but while connected with the company they made no attempt to finance the company or make conditions under which they would agree to arrange for the necessary finances."

Criticizes American Bankers

Mr. Knowles criticized American bankers for their policy of ignoring the possibilities of the Chester concession. "It is a pity that such a project as this finds itself in peril because certain American interests who appreciate its value have not the spirit of constructive policy to cooperate with others who might be so useful and helpful in developing a great project such as this is," he said. "The concession and the great values and potentialities it possesses have been offered to the American nation and people because of the great admiration that the Turks have for them and their desire to associate themselves with the people of our country. It may be a matter beyond the vision of the so-called capitalists of our country, who seem to be content in investing their and their clients' money in the different kinds and perhaps near-at-home class of securities.

"Had the world had only people of that kind—I mean without vision—the Panama Canal and the Suez Canal and some of the greatest industrial enterprises of the world would never have been created or be in existence. Americans had their opportunity in regard to this concession, but they have not yet responded nor shown that practical appreciation of its value to take advantage of it."

Mr. Knowles denied reports that the Turkish Government was about to declare the concession in default because certain of the requirements were not lived up to. He said that the first thing to be done under the terms of the concession was the building of a railway, work upon which started yesterday, according to schedule.

Oil Industry Asked to Aid

Henry Woodhouse, a stockholder of the Ottoman-American Development Co., has sent a letter to the 22 stockholders of record asking their advice in reorganizing the finances of the company. He also asks suggestions for filling the vacancies caused by the recent resignation of the five directors.

Mr. Woodhouse proposes that the number of directors be increased from 7 to 16 and that the vacancies be filled with representatives of 12 large American industries which are expected to benefit most from the development of the concession. The industries enumerated by Mr. Woodhouse are the petroleum industry, copper industry, mining, smelting and refining; railroad equipment, building construction, automotive, public utilities, agricultural machinery and farm equipment, electric and radio equipment, import and export, construction machinery and shipping. A special invitation is expected to be extended to these industries, through their Chamber of Commerce, to participate in the development of the concession and to lend their financial aid.

It is pointed out in the letter that speedy action is necessary in raising funds to carry out the plan. The question of finances has been the stumbling block since the concession was granted by the Turkish Government. The backers of the proposition say that if American interests do not lend their financial assistance, it will be necessary for the company to seek capital abroad. Thus far, it is understood, all requirements under the contract have been lived up to, but the letter says:

"These concessions were granted with a time limit for each of the 15 main sections and this time limit was established because the Turks did not want to have a repetition of the past experiences, when valuable resources were 'frozen' through failure of concessionaires to operate them."

Regarding the aid sought from industries the letter says:

"The participation of these industries may be extended to having each industry invest from $20,000 to $50,000, which would be a small investment considering the returns that may be expected, but would make it unnecessary to finance the company's preliminary surveys by sale of its capital stock. The actual building and operating of the 12 railroads and three ports will be financed separately, each through a subsidiary company being formed for that special purpose."

Possibility of Forfeiture

WASHINGTON, D. C., Nov. 10.—The Chester concession in Turkey has never been given specific approval by the Washington Government as it is not American policy to recognize such enterprises except to the extent that there is legitimate interest of American nationals in the transactions. So far as the Chester concession is concerned, it is understood that the Washington Government lacks information showing there is a substantial interest held by Americans in that agreement.

Washington officials have not been involved in the recent developments in Angora, or elsewhere in connection with the project. The terms of the concession are complicated and officials here would not commit themselves as to when Turkish authorities might declare it forfeited by default through failure of the concessionnaires to perform within a fixed limit the work stipulated as necessary in the development of resources in Turkey involved.

Press reports from Turkey within the last few days have indicated that the Turkish Government intended to declare such a default against the holders of the Chester concession, but the Washington Government has no official information on the subject.

Denies Forfeiture by Turkey

PARIS, Nov. 10. — The Ottoman-American Development Co., which holds the Chester concessions, has already begun work in Turkey in accordance with the terms of its contract, it was made known by Colonel Clayton-Kennedy, representative of the company, who has just returned from Asia Minor. The approach of winter will make it impossible to get full activities under way for some time, he said, but material is being shipped and the engineers on the ground are working under extra pressure to make up for the regrettable delay arising from the internal controversies which now have ended.

Colonel Clayton-Kennedy denied several reports current regarding the company, one of them to the effect that the concessions had been offered to the German magnate, Hugo Stinnes, and another that the Turkish Government had cancelled the concessions. The company's spokesman said he believed the latter story was propagated by a group of Continental bankers hoping to prevent American development of Turkey.

London Hears Rumors

LONDON, Nov. 10. — An Exchange Telegraph dispatch from Constantinople quotes newspapers there as stating that Colonel Clayton-Kennedy, representing the Ottoman-American Development Co., offered the Chester concessions in Turkey to Hugo Stinnes, the German industrial leader, but the negotiations collapsed. Herr Stinnes, it was stated, preferred to deal directly with the Turkish Government after the expiration of the American option on November 15.

A correpsondent of the Manchester Guardian at Constantinople states that work under the Chester contract is expected to be begun before November 11, in accordance with the concessionaires' repeated promises. A group of Turkish engineers left November 5 for Samsoun, where operations on the 390-kilometer Samsoun-Sivas Railway must be started before the time limit expires. "A representative of Chester group here says work will be started November 9. Turkish engineers will be employed, as Americans have not yet arrived. Delegates are leaving for Angora to arrange further details, while other concession hunters, including several British, are waiting at Angora to pick up parts of the concession if the Chester group fails to live up to its promises."

Anglo-Persian After It

TORONTO, Ont., Nov. 10.—Report is current that Canadians interested in the Chester concessions have received offer for control from Anglo-Persian Oil Co. provided clear title can be delivered.

Will Discuss Mosul Soon

LONDON, Nov. 10.—Negotiations between Great Britain and Turkey over the status of Mosul, with its rich oil fields, will soon be begun either in London or Constantinople. It was stipulated at the Lausanne Peace Conference, when the subject was last discussed, that if the contracting parties failed to reach

(Continued on Page 32)

Questions & Answers on the Wiggins Floating Roof

Does the Wiggins Floating Roof actually float?

Yes, fundamentally it is like the inverted lid of a baking powder can. The rim is considerably higher than the depth of displacement.

Of what material is the roof made?

Steel throughout, with a fire-proof asbestos connection between rim of float and horizontal of seal. No gravel or other similar materials are required. The construction is strong, long-lasting and fire-proof.

What are the essential parts of the roof?

The float, or the floating portion of the roof; the seal, which seals the space between float and tank shell; the rain control system; and the rain drainage system.

How large is the float?

Its diameter is one foot less than the tank diameter.

What is it made of?

Steel throughout.

Is it a riveted float?

Either riveted or welded; preferably the latter.

Does the float have a rim?

Yes. It is 17 inches high.

Is the float reinforced?

Yes. Trussing maintains the float in a substantially horizontal plane.

How close does the seal approach the tank shell?

It bears directly against the shell.

Is there no evaporation space whatever?

There is a maximum open space in a 55,000 barrel tank of only 15 square feet.

Would not this cause some evaporation?

Practically none. The open space in a 55 with ordinary roof is more than 10,000 square feet.

Yes, but if the ordinary roof is gas-tight would not that prevent evaporation?

No. Air is sucked in and expelled by breathing and filling and the expelled air takes much valuable gasoline vapor with it.

How much?

This question is too broad to be answered here, but, for example, a 55 handling 10,000 barrels of crude a day will waste $10,000 worth of gasoline in a year.

Are any complete figures available covering all sort of conditions?

Yes. These will be published in a bulletin soon to be issued. The coupon below may be used in ordering your copy.

REQUEST SLIP

CHICAGO BRIDGE & IRON WORKS
0000 Transportation Building, Chicago

Please send me the Report on Fire Tests on Wiggins Floating Roof, and the bulletin to be ready soon.

Name.....

Title.....

Company.....

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225

Tank Won't Burn if Equipped With Wiggins Roof—*fire tests show*

The remarkable demonstration of the fire-resistive properties of the Wiggins Floating Roof which was carried on at our Chicago plant on October 16th showed plainly that a tank so equipped will safely withstand extreme exposure to fire.

Fire was brought up to a vent without igniting the gasoline in the tank. Gasoline was poured on the roof and ignited without harming the gasoline inside. Other tests were entirely successful.

These tests were *real* tests. They were not made on a model, but on a tank *30 feet* in diameter. They were not performed on a tank of crude but on a tank containing gasoline. The tests were witnessed by many prominent oil company officials, engineers and insurance men.

The official report on the tests prepared by an impartial firm of engineers, The Pittsburgh Testing Laboratories, brings out some astounding facts. For instance:

"A soldering torch was used with a yellow flame about 15 inches long. This flame was played against the inside of the shell of the tank, just at the top of the shoe. This operation was carried out until about a third of the circumference had been covered.
Result: No fire."

And again:

"A gasoline soaked piece of waste was ignited and thrust into one of the vents. There was an ignition of the vapor similar to that occuring when the torch was held at the mouth of the vent but of considerably less intensity. Vapor continued to come from one of the vents and to burn for about ten seconds. Then there was a slight puff and all flame was out.
Result: No continuous fire."

You will want to read the complete report, which contains pictures of the tests, tells how the tests were performed and gives a description of the major parts of the roof. The adjoining coupon will bring it to you.

CHICAGO BRIDGE & IRON WORKS

DALLAS 1641 Praetorian Bldg. | NEW YORK 3147 Hudson Terminal | CHICAGO 2128 Transportation Bldg. | SAN FRANCISCO 1054 Rialto Bldg.

HORTON Products include the 5 RING 55, 7 RING 80 and other tanks, THE HORTONSPHERE and Refinery Equipment

Oil Securities Strong During the Week

Best Show of Underlying Strength Seen Since the Prolonged Decline Began Last March. Mitchell Optimistic

By N. O. Fanning
Room 525 No. 30 Church St., New York

NEW YORK, Nov. 12.—Oil stocks were strong during the past week, registering the best show of underlying strength that has been seen since the prolonged decline beginning last March. The strength continued until gains of two to five points were noted throughout the list, and unfavorable developments such as reductions in the price of crude did not seem to have any effect whatever on the market.

The sudden change in sentiment in financial circles which was reflected in the stock market did not at first make itself evident in the oils, but these issues later began to pick up and at the present time the petroleum stocks are leading the market. Oil stocks led in activity on the principal exchanges, so that the strength in these issues reflects a belief that the oil situation is improving, or at least is about to show distinct improvement.

The financial statement of the California Petroleum Corp., showing net earnings for the first nine months of 1923, equivalent to $6.82 per share (par $25) on the common stock after allowance for preferred dividends, caused wild buying of the common stock, and this seemed to impart buoyancy to the entire petroleum list. Houston Oil, Cosden & Co., and Pan-American Petroleum & Transport common and common B were especially active and higher.

The Tide Water Oil Co. also made a favorable financial report for the first nine months of 1923, earning net $6.95 per share on its stock (par $100), against $6.63 during the corresponding period of 1922.

It becomes quite apparent after a perusal of the financial statements of the larger oil organizations which have been published during the last two weeks that oil stocks have been heavily oversold, particularly the issues of the big refining companies, and the large crude oil producers. The financial community now awaits with considerable interest the publication of the financial statements of such concerns as Standard Oil Co. of California and Standard Oil Co. of New Jersey for the year 1923. These, of course, will not be out for several months.

Mitchell Is Optimistic

Optimism has been quite out of fashion in the petroleum industry of late, to such an extent that Wall Street had come to ignore anything of a favorable nature. Following a break in The Texas Co. stock from about 40 to 35, John J. Mitchell of the Illinois Trust Co., a director of the company, issued a statement giving his views on the oil situation. He said the preesnt depression in the oil industry, in his opinion, was only temporary and that it will emerge from its present unsettled state stronger and better than ever. He denied that The Texas Co. planned any new financing and said that rumors that the company's dividend was in danger were malicious and that there never was any doubt that the dividend would be paid.

"There are many reasons which lead me to believe the oil industry has turned the corner," Mr. Mitchell said. "Overproduction brought about by the development of a few new flush oil pools never lasts long.

"I believe conditions will be reversed next year. With overproduction of crude oil no longer a factor and with demand for both crude oil and refined products constantly on the increase, we can look for real prosperity in the oil business, especially for such companies as are complete units, having producing, refining, transporting and marketing facilities.

"I read recently an item which was taken from a Government report showing at the close of September there was only 40 days' supply of gasoline on hand in the nation.

"There is no doubt as to the possibilities of the gasoline and oil business and there is now another important department being developed, namely, kerosene or furnace oil, around Chicago, and, in fact, throughout the United States. The demand for oil burners for use in homes and other kinds of buildings is enormous. It will only be a short time when furnace oil will be in general use for domestic heating purposes as a substitute for coal."

Following the dividend meeting of The Texas Co., when the regular dividend was declared, the stock rebounded several points from the low mark.

Oil Consumption Greater

The financial statements of the oil concerns which have made them so far show many interesting things with relation to actual oil conditions this year. The report of the Tide Water Oil Co., for instance, shows gross earnings for the first nine months of 1923, amounting to $45,098,028, which is a large gain over the corresponding periods of both 1922 and 1921, and is only about $500,000 under the nine months of 1920, which is considered the most prosperous year the industry has ever had, and when oil prices were at least twice as high as during the present year.

Expenses this year were considerably higher than in 1921, so the net was reduced approximately; yet, the fact of the large gross income this year in itself is a testimony to the big increase in oil consumption, inasmuch as Tide Water Oil is a representative, all-around concern.

Taking this report at its face value, and realizing the probability of higher oil prices in 1924, the latter year should prove one of the best in the history of petroleum.

Tide Water Report

The consolidated income account of the Tide Water Oil Co. and subsidiaries for the nine months ended September 30, 1923, compares as follows:

	1923	1922
Gross	$45,098 028	$38,539,809
Expenses	39.384,585	33,104,533
Operating income	$ 5,713,443	$ 5,435,276
Other income	756,328	664,616
Total income	$ 6,469,771	$ 5,999,892
Depreciation and depletion	3,079 710	2,635,988
Net income	$ 3,390,061	$ 3,363,904
Outside stockholders proportion	64,687	69,387
T. W. proportion	$ 3,454,748	$ 3,294,517
Surplus	3,454,748	3,294,517
Surplus Jan. 1	17,320,881	12,067,325
Adjustments	$ *71 414	$ 69,241
P. & L. Surplus	$20,704,215	$15,431,583

*Debit.

The balance sheet of the Tide Water Oil Co. as of September 30, 1923, shows cash of $2,200,292, crude and refined inventories of $12,351,355, and notes and accounts receivable of $5,268,261.

California Petroleum Report

The California Petroleum Corp. for the nine months ended September 30, 1923, reports net earnings after all charges for taxes, depreciation, losses and other deductions, except sinking fund reserves, of $5,861,407, against $2,079,488 for the corresponding period of 1922. Gross earnings for the nine months of this year were $15,363,557, against $6,643,537 in the same period of last year.

The Union Trust Co. of Pittsburgh, trustee for Skelly Oil Co. first mortgage and collateral trust 10-year 7½ per cent bonds, dated December 1, 1921, will redeem, December 1, 1923, designated bonds totaling 163 at par and accrued interest to December 1, 1923, at 7½ per cent interest plus 5 per cent of the principal.

The Continental Oil Co. declared regular quarterly dividend of 50 cents, payable December 15, to stock of record November 23.

White Oil Reorganization

A special meeting of the stockholders of the White Oil Corp. has been called for November 20 to authorize the sale of the property and assets of the company to a new corporation which will be organized in accordance with the plan of reorganization dated September 15 and which provides for an exchange of stock. A special meeting also will be held on November 16 to vote on an amendment to the certificate of incorporation to permit the sale of the property.

The Ohio Oil Co. has declared a quarterly dividend of 25 cents a share, compared with 50 cents in the preceding quarter and 75 cents in each of the two first quarters of the year. The Crescent Oil Co., also one of the Standard Oil group, passed its dividend. Previous dividend was 37½ cents a share.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

No.	Stock—	Par	‡Dividend Rate	Closing Quotations Nov. 13	Nov. 5	Range 1923 High	Low
1.	Associated Oil	25	6	*25½	25⅜	27⅛	24⅛
2.	Atlantic Refining, common	100	4	*108	103⅝	160	98¾
3.	Barnsdall "A"	25	..	*11	11	35	9⅜
4.	Caddo Central Oil	..	..	1⅜	1⅜	9⅛	1⅛
5.	California Petroleum, common	25	7	21⅛	19	29⅛	17⅛
6.	Cosden & Co., common	..	..	25⅝	24⅝	62½	22⅝
7.	General American Tank	..	†3	48½	*41	71⅝	40
8.	General Asphalt	100	..	31¼	30¼	54	23
9.	Houston Oil	100	..	50	48½	78	40⅝
10.	Independent Oil & Gas	10	..	*4	*4⅛	11¼	3⅝
11.	Indiahoma Refining	25	..	*1½	1¼	9	1¼
12.	Indian Refining	10	..	*5¼	*4⅛	8½	5
13.	Invincible Oil	50	..	8⅝	7¼	19¼	8
14.	Maracaibo	..	..	20⅝	19⅛	22⅛	16
15.	Mo'land Oil	..	..	20¼	*21⅛	59⅝	18⅛
16.	Mexican Seaboard	..	..	11⅜	10	19⅝	5⅜
17.	Middle States Oil	10	..	4½	5	12¼	4⅜
18.	National Supply	50	6	57½	55	59⅝	50
19.	Pacific Oil	..	†2	37⅝	37	48⅞	31½
20.	Pan-American, common	50	16	58½	58¼	93½	53
21.	Panhandle Prod. & Ref.	..	..	*1	*1¼	6¼	1⅜
22.	Phillips Petroleum	..	†2	23	23½	69⅝	19⅜
23.	Pierce Oil, common	25	..	1⅝	1⅝	6	1½
24.	Producers & Refiners	50	4	18	18½	58¼	17⅝
25.	Pure Oil Co., common	25	6	17⅝	16½	32	16¼
26.	Royal Dutch, N. Y., sh.	13.40	2.62	49½	47⅞	55⅛	40½
27.	Shell Transport	10	x92½	*34	33⅜	41¼	29½
28.	Shell Union, common	..	†1	14⅜	14¼	19¼	12⅜
29.	Simms Pet.	10	..	8⅝	8⅝	16⅝	6⅛
30.	Sinclair Consolidated, common	..	†2	17⅝	17⅝	39⅜	16
31.	Skelly Oil	25	..	16¼	16¼	35	12⅛
32.	Standard of California	25	8	53	54	64⅛	47⅛
33.	Standard Oil of N. J.	25	4	32⅝	31¼	44⅝	30⅞
34.	Standard of New Jersey, preferred	100	7	117	117	118	114¾
35.	Superior Oil	..	..	2¼	*2⅛	6⅝	2
36.	The Texas Co.	25	12	38¼	36¼	52⅞	35
37.	Texas & Pacific Coal & Oil	10	..	7	6⅛	24⅝	6¼
38.	Tide Water Oil	100	..	100¼	100⅛	144	94
39.	Transcontinental	..	..	2	2¼	14⅛	1⅜
40.	Union Tank, preferred	100	7	*107¼	*107¼	114	106
41.	White Eagle Oil & Ref.	..	2¼	22	20½	30⅝	20⅛
	Standard Oil Stocks						
42.	Anglo-American Oil	5	16	14½	14½	19⅝	13⅛
43.	Borne Scrymser	100	12	*131	*128	153	110
44.	Buckeye Pipe Line	50	14	73	72	94	71
45.	Chesebrough Manufacturing, com.	100	14	*225	*224	238	205
46.	Continental Oil	25	8	*37⅛	37½	50	32½
47.	Crescent Pipe Line	25	..	*12	16	25	16
48.	Cumberland Pipe Line	100	12	*112	114	116	80
49.	Eureka Pipe Line	100	8	*92	*93	117¼	96
50.	Galena-Signal, common	100	4	60⅝	60	78	55
51.	Humble Oil & Ref.	25	4.8	34	34⅛	41	28¼
52.	Illinois Pipe Line	100	16	*150	*153	171	152
53.	Imperial Oil, Ltd.	25	16	*99	95⅛	123	92
54.	Indiana Pipe Line	50	16	*83	86	103	83½
55.	Intl. Pet., Ltd.	..	x50	14⅜	13⅛	24⅜	13¼
56.	Magnolia Pet.	100	4.5	*129	130	166	123
57.	National Transit	12.50	16	*20⅛	*21⅛	29	22⅜
58.	New York Transit	100	10	*91	*93	138	92
59.	Northern Pipe Line	100	25	*97	*101	111	96
60.	Ohio Oil Co.	25	4	54½	57	85⅝	48⅝
61.	Penn-Mex Fuel	25	..	*19	19⅞	28	10½
62.	Prairie Oil & Gas	100	8	185½	184	272	152
63.	Prairie Pipe Line	100	8	*97½	98	117	93
64.	Solar Refining Co.	100	15	*172	*174	212	161
65.	Southern Pipe Line	100	16	*91	92	116	91
66.	South Penn Oil	100	..	106	*116	196	100
67.	South West Pa. Line	100	8	78	*78	89	66
68.	Standard of Indiana	25	10	55¾	55⅝	69⅞	49¼
69.	Standard of Kansas	25	8	38½	*39	56¼	36½
70.	Standard of Kentucky	25	16	95½	93	109½	76
71.	Standard of Nebraska	100	20	*200	*215	280	186
72.	Standard Oil of N. Y.	25	5.6	40¾	41	49⅝	35½
73.	Standard of Ohio, common	100	10	273½	274	317	270
74.	Swan & Finch	100	..	*24	*23	38	21½
75.	Vacuum Oil	25	8	51¼	52	55⅛	40
76.	Washington Oil	10	..	*20	*22	28	19
	Miscellaneous Stocks						
77.	Cities Service, banker's shares	..	$21	*13	12⅜	18½	12⅜
78.	Gulf Oil Corporation of Pa.	25	6	55	54	69¼	45⅝

*Bid, no sales. †In dollars. ‡6 per cent in cash and 15 per cent stock dividend declared; now being paid in scrip. §The figures carried in this column are kept up-to-date as far as possible but are not guaranteed. xCents per share.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange weekly was as follows:

Nov. 13	43.84	Oct. 2	43.53	Aug. 21	44 24
Nov. 6	42.60	Sept. 25	43.48	Aug. 14	43.39
Oct. 30	41.66	Sept. 18	41.43	Aug. 7	43.87
Oct. 23	42.42	Sept. 11	44.78	July 31	42.58
Oct. 16	42.80	Sept. 4	44.06	July 24	46.32
Oct. 9	43.29	Aug. 28	44.18	July 17	46.52

(Continued on Page 32)

The Modern Executive Has a Heart—and a Vision

The modern executive sees beyond the walls of his factory—he sees into the homes of his workers.

He sees what he has wrought—confidence, happiness, peace of mind.

Modern executives who mold industrial opinion and nurse its growth, administer their lives and business with minds open to all things that tend toward betterment of working conditions.

The vision of these men encompasses the truism that workers give to their daily tasks a far greater measure of efficiency when their minds are free from anxiety and their homes and families securely protected against unlooked-for disaster.

Group Insurance is but one way of adding to the betterment of working conditions, but the benefits that have accrued from its protection and the influence that its giving has created are factors that have appealed to a great number of the most prominent executives in the commercial field.

Many of the largest organizations have subscribed to its benefits.

THE TRAVELERS INSURANCE COMPANY
Hartford

L. F. BUTLER, PRESIDENT

THE TRAVELERS INDEMNITY COMPANY
Connecticut

THE TRAVELERS

We have prepared a portfolio on Group Insurance for business executives. Send for your copy today

Gas Oil Used In New English Motor Fuel

Mixed With Gasoline and Ether and Reported to Give Satisfactory Results, to be Manufactured on Large Scale

Large consumers have heard more or less remarkable reports concerning a patent composite fuel known as Pynol, says the London Oil News. This was known to be composed mainly of petroleum products, petrol and gas oil. The results of a few tests of the fuel against petrol and petrol mixtures have become public; but beyond these little that is authentic has been published, so that an interview upon the subject with J. Sidney Critchley, M.I.Mech.E., M.I.A.E., will be of more than usual interest. Mr. Critchley is a past president of the British Institution of Automobile Engineers.

"Although there has been a temporary overproduction of petrol," he said, "the demand for motor fuel is increasing. It is probable that the import of petrol to Great Britain in 1923 will exceed 330,000,000 gallons; and allowing for other fuels, it is evident that the demand here is approaching 400,000,000 gallons per annum. Any new, cheap and efficient motor fuel is therefore sure of a welcome. Mixed fuels are not new, as we see from the case of petrol-benzol and petrol-kerosene mixtures; but a mixture of petrol with any petroleum product heavier than kerosene was until recently unknown.

Claims for New Product

"Gas oil, as we know, is the distillate next after kerosene, and has a s.g. of about 0.860. It is produced in enormous quantities and sold at a very low price. By mixing it with petrol and ether in certain prescribed conditions we obtain Pynol. The method of blending is simple; the resultant mixture is uniform and stable: and the process does not require distillation or intricate chemical operations. Pynol was invented in France; it was improved in Germany; and it has since been perfected in conjunction with H. C. Pyne; hence its name."

Samples of the fuel were shown that before the recent improvements in blending was a dark brown, considerably darker, in fact, than gas oil. The up-to-date liquid has a s.g. of about 0.786, is straw colored, smells of ether, and instead of evaporating completely from the palm of the hand as good petrol does, leaves a trace of oil. It is being produced in Germany on a large scale by the principal liquid fuel organization in that country—the Benzal-Verband, which is turning out large quantities, the Berlin plant alone being capable of producing 28,000,000 gallons per annum. In addition there are similar plants at Hamburg, Breslau and Essen.

"I have made and witnessed numerous tests of Pynol," continued Mr. Critchley, "both on the bench and on the road. It should be mentioned that Pynol and petrol usually require different carburetor settings to bring out their best; but even in some cases where the petrol setting was allowed to remain Pynol proved the better fuel. In fact, the many road trials with various types of motor vehicles have all demonstrated that Pynol is superior to petrol, both in power produced and in consumption. With a well-known type of commercial vehicle the ton m.p.g. were 75.3, against 62.1. All the road tests I have conducted demonstrate that Pynol is far better than No. 3 petrol, and may be classed as No. 1 grade, in comparison to which it is in some respects superior."

Characteristic Features

The first test recorded began on February 10 this year, and the latest took place on October 17. The variety is striking; besides bench tests over 40 road trials have been made with every type of self-propelled vehicle, including motor-lorries of six tons capacity, passenger vehicles, pleasure cars and motor-cycles. In all these cases Pynol was used in competition with other motor fuels, either petrol or petrol-benzol mixtures.

As a result of his experiments Mr. Critchley sums up the characteristic features of the new fuel as follows: "Pynol can be produced more cheaply than petrol; but we are not out to cut the market. In starting from cold it is equal to petrol. Carburization presents no difficulties. Generally the consumption is less than petrol, with more m.p.g. and greater horsepower. There is a marked decrease in pinking; there are no constituents in the fuel which are detrimental to metals."

The plans for the supply of the fuel on a large scale in Great Britain are rapidly taking shape. The holders of the British rights are the sole agents in Great Britain for the products of the General Petroleum Corp. Already this year they have imported many cargoes, averaging one a month. In fact, apart from Pynol, they have an extensive import business, and the two can be conveniently run together. A freehold estate of 128 acres has been acquired at Port Victoria, at the mouth of the Medway, where that river joins the Thames. Here it is proposed to receive all cargoes of petroleum and petroleum products, to construct storage installations, and to manufacture Pynol on a large scale. A jetty, railway sidings of considerable length, and many score of storage tanks are projected, besides an ether plant, using alcohol as the raw material, that will be capable of producing 25 tons of ether per day.

"We are providing to begin with," added Mr. Critchley, "for an annual demand of 20,000,000 gallons of Pynol. But we expect to exceed that rate very shortly. It should be emphasized that our object is not to put the ptrol trade out of business. In fact, as at present arranged, our No. 1 will be sold at a slightly higher rate than No. 1 petrol; and as far as we can see we shall be relying for our support upon the large consumers who can try out for themselves, with comparative tests, the merits of this fuel as against others."

New Use for Gas Oil

The petroleum industry, which first produced the fuel that made the motor car possible, may well feel gratified, says our London contemporary, that the basis of Pynol is petroleum, and that it affords a remunerative future for that very troublesome and neglected member of the family—gas oil.

"It appeal to us," the London Oil News continues, "not only because its constituents are practically entirely made up of well-known petroleum products, but because it afforded a ready means of utilizing gas oil, which is so cheap today that it was to be had f.o.b. in cargo lots at certain points at well under 2d. per gallon. In the natural course of events one might have looked for the use as motor fuel of the next fraction below petrol, namely, kerosene. That forecast is being borne out by the considerable advance in the use of the heavier fuel for commercial and industrial purposes, of which the farm tractor is a good type. But this development is being retarded to a great extent by the present cheapness of petrol and the superabundant supplies of that commodity. Nevertheless, when—as we expect soon will be the case—the world's output of petrol adjusts itself to, or becomes more commensurate with, the demand for it, the economic pressure towards some other motor fuel will again become severe. If gas oil, which has been the ugly duckling of the petroleum family for some years past, could be converted or incorporated into a new liquid fuel that could compete commercially with petrol, a step of great importance to the three branches of the petroleum industry—producing, transporting and marketing—would have been taken. It may be remarked that its international history—invented by a French chemist, manufactured by a German industrial group, and brought to perfection in England—is an unusual one. Everyone will not agree about the virtues claimed for it, even as there are some people, even scientific gentlemen who drive their own cars, who prefer benzol to petrol."

MID-CONTINENT REFINERY RUNS AND SHIPMENTS FOR WEEK. NOV. 3

One hundred and fifteen Mid-Continent refineries, consisting of plants located in the States of Oklahoma, Kansas, Arkansas, North Louisiana and North Texas, ran 1,454,718 barrels to their stills for the week ending November 3, according to the weekly statistical bulletin issued by the Western Petroleum Refiners Association. The statistical department of the association during the past month has been issuing weekly bulletins covering runs to stills, output of refined products, shipments and other data of special importance covering market conditions. These reports are based on weekly reports on operation made by the individual plants in the Mid-Continent area. The reports are in table form and the association makes no comments on conditions as indicated in the data.

The following tables cover the main features of the report for the week ending November 3, and are largely self-explanatory.

SUMMARY OF REPORTS FROM 115 REFINERIES HAVING A CAPACITY OF 437,050 BARRELS

Week Ending 7 A. M., November 3, 1923

	Bbls.
Crude oil run to stills	1,454,718
Semi-refined oils taken from stocks and run to stills	805,983
Total oils consumed by stills	2,260,701
Output of finished products—	Gallons
Gasoline	20,830,685
Kerosene	5,950,833
Gas and fuel oil	30,784,187
Stocks on hand at 7 A. M., November 3, 1923—	Bbls.
Crude oil	5,429,353
Semi-refined oils held for further refining	1,575,191
	Gallons
Gasoline	103,242,238
Kerosene	13,877,653
Gas and fuel oil	115,229,175

COMPARISON OF SHIPMENTS FROM IDENTICAL REFINERIES

Five States Combined, 107 Refineries, Capacity, 409,050 Barrels

	Shipments Week Ending Oct. 27	Nov. 3	Percentage Change
Gasoline	19,867,618	20,383,540	2.60 Inc.
Kerosene	5,513,239	5,550,247	.67 Inc.
Gas and fuel oil	27,255,110	31,703,804	16.32 Inc.

The Relationship of the Amount Shipped to the Amount Manufactured During the Week Ending November 3, Is Shown in the Following Table

Five States Combined, 109 Refineries, Capacity, 412,250 Barrels

	Shipped	Manftrd.	Amount Shipped to Amount Manftrd.
Gasoline	20,840,586	20,132,771	103.5%
Kerosene	5,660,669	5,727,479	98.8%
Gas and fuel oil	32,494,548	29,465,429	110.3%

COMPARISON OF STATISTICS FOR WEEK ENDING NOVEMBER 3, 1923, WITH THOSE OF THE PREVIOUS WEEK FOR IDENTICAL REFINERIES

	Kansas	Oklahoma	Texas	La. and Arkansas	Total
Number of refineries	20	49	30	10	109
Daily still capacity, bbls.	71,800	217,500	104,850	18,100	412,250
Percentage Increase or Decrease Compared With Previous Week					
Materials for stills:					
Crude, Item A	14.29 Inc.	2.87 Dec.	6.72 Inc.	38.15 Dec.	1.49 Inc.
Other oils, Item B	0.31 Inc.	9.57 Inc.	111.23 Inc.	63.52 Dec.	40.33 Inc.
Total	13.30 Inc.	1.46 Inc.	39.51 Inc.	38.80 Dec.	12.90 Inc.
Output during week:					
Gasoline, Item C	10.81 Inc.	9.22 Dec.	18.12 Inc.	32.65 Dec.	0.44 Dec.
Kerosene, Item D	8.89 Inc.	7.19 Inc.	18.11 Inc.	36.39 Dec.	8.35 Inc.
Gas and fuel oil, Item E	19.38 Inc.	7.12 Dec.	29.48 Inc.	45.40 Dec.	5.84 Inc.
Stocks at close of week:					
Materials for stills:					
Crude, Item J	3.00 Dec.	0.96 Dec.	51.21 Dec.	81.60 Inc.	10.06 Dec.
Other oils, Item K	19.16 Dec.	14.59 Dec.	91.19 Inc.	19.72 Inc.	12.03 Inc.
Finished products:					
Gasoline, Item L	1.70 Inc.	3.67 Dec.	8.59 Inc.	3.05 Dec.	0.69 Dec.
Kerosene, Item M	4.45 Dec.	0.76 Inc.	2.65 Inc.	1.66 Inc.	0.49 Inc.
Gas and fuel oil, Item N	22.43 Inc.	5.06 Dec.	4.93 Dec.	3.75 Inc.	2.67 Dec.

MEXICAN OIL DECREE

NEW YORK, Nov. 12. — American subsoil petroleum rights acquired before the putting into effect of the present Mexican constitution on May 1, 1917, are guaranteed at least by implication, in a presidential decree published by the Diario Official under the title "Decree providing that in any alienation whatsoever of national land, a nation's rights to the subsoil must be reserved."

The document is being given very careful study by counsel of foreign petroleum interests after inquiries brought out semi-official statements that the decree was an attempt by the government to give general effect to the supreme court's decision in The Texas Co.'s case, which involved the company's subsoil petroleum rights granted under legislation enacted prior to promulgation of the present constitution.

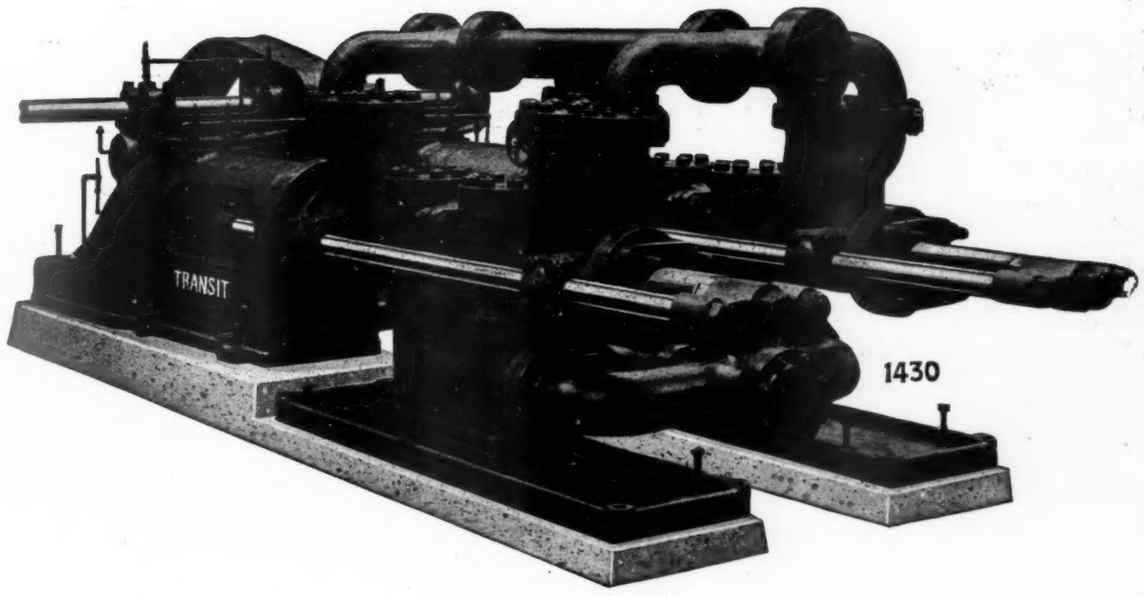
H. L. PRATT, JR., TO TURKEY

Herbert L. Pratt, Jr., son of the president of the Standard Oil Co. of New York, will start soon for Mesopotamia, where he expects to spend the next few years in the development of oil properties in that country and in Turkey, which was interrupted by the war. Mr. Pratt, a recent graduate of Harvard, has been on an extensive trip through the Southwest with his father to familiarize himself with working conditions and methods in the American fields.

ACCUMULATING OIL

A large number of private consumers of crude oil are taking advantage of low prices by increasing stocks on hand. Texas Gulf Sulphur Co. has accumulated a two years' supply. Crude oil is the chief cost in the mining and refining of sulphur.

TRANSIT Built the Biggest Oil Pump Ever Used in the Midcontinent



One of our Representatives writes in from the Midcontinent field that perhaps we should have exhibited a larger pump at the recent Tulsa Petroleum Exhibition.

The fact that TRANSIT builds the World's largest oil pumping units is so generally known that we did not think it necessary to exhibit TRANSIT'S "biggest pump" at the show.

Our purpose was not to awe anybody by size, but rather to show what most oil men would likely be interested in. So we exhibited our **small** 4½x12" Horizontal Duplex Texas Type Pump, illustrated above, in our Agents' booth—the Frick-Reid Supply Co.

Over three years ago conditions in the oil industry began calling for a pump like this, so we designed and made one—Remember, **three years ago**—and we called it our Texas Type.

THE SUCCESS OF THIS PUMP HAS BEEN TOO MUCH—not for us, of course,—but it has been too much for the competition, and several mushroom imitations are today seen in the pump field.

But oil men are not to be deceived by unsupported claims—they have learned that experiments are no substitute for experience.

Our New Bulletin No. 12 lists sizes and capacities of the Texas Type Pumps. Send for it now, or better still give us an idea of your conditions, and we will fit you with pumps. No obligation, of course.

NATIONAL TRANSIT PUMP & MACHINE CO.

OIL CITY, PA.

District Offices: **New York, Philadelphia, Pittsburgh, Cleveland, Kansas City, Houston, Denver**

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

CHICAGO DIST. (Based on Group 3)—	Nov. 13		Nov. 6		Oct. 30	
50-52 450 end point (Naphtha)	.05¾	.06	.06	.06¼	.06	.06½
56-58 450 end point	.05½	.06	.06	.06¼	.06¼	.06½
58-60 437 end point (New Navy)	.06¼	.06½	.06¼	.06½	.06¼	.06¾
60-62 400 end point	.07¼	.07¾	.08	.08¼	.08¼	.08½
64-66 375 end point	.08½	.09	.09	.09½	.09	.09½
68-70 360 end point	.10	.10½	.10¾	.11¼	.10½	.11
OKLAHOMA (Group 3)—						
50-52 450 end point (Naphtha)	.05½	.06	.05¾	.06	.06	.06¼
56-58 450 end point	.06	.06¼	.06	.06¼	.06¼	.06¾
58-60 437 end point (New Navy)	.06½	.06½	.06¼	.06½	.06½	.06¾
60-62 400 end point	.07½	.07¾	.07¾	.08¼	.08¼	.08½
64-66 375 end point	.08½	.08¾	.08¾	.09¼	.09½	.09¾
68-70 350-365 end point	.10	.10½	.10½	.10¾	.10¾	.11
KANSAS—						
58-60 437 end point (New Navy)	.06¼	.06½	.06½	.06¾	.06¾	.07
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.05¾	.06	.05¾	.06	.05¾	.06
50-52 440 end point (Naphtha)	.05¾	.06¼	.05¾	.06¼	.05¾	.06¼
56-58 450 end point	.06	.06¼	.06	.06¼	.06	.06¼
58-60 437 end point (New Navy)	.06⅛	.06½	.06¼	.06½	.06¼	.06½
60-62 400 end point	.07¼	.07½	.07¾	.08¼	.08	.08¼
64-66 390 end point	.08	.08½	.08½	.08¾	.08¾	.09
64-66 375 end point	.08¼	.08¾	.08¾	.09¼	.09	.09¼
NORTH LOUISIANA—						
56-58 450 end point	.06	.06¼	.06¼	.06½	.06¼	.06½
58-60 437 end point (New Navy)	.06¼	.06½	.06½	.06¾	.06¾	.07
64-66 400 end point	.07¾	.08	.08	.08¼	.08	.08¼
64-66 390 end point	.08½	.08¾				
ROCKY MOUNTAIN STATES—						
58-60 437 end point (New Navy)	.09½		.11¼		.11¼	
PENNSYLVANIA—						
52 Naphtha	.09½		.10		.10	
54 Naphtha	.09¾		.10¼		.10¼	
56 Gasoline	.10		.10½		.10½	
58 Gasoline	.10¼		.10¾		.11	
60 Gasoline	.10¾		.11½		.11½	
62 Gasoline	.11		.13½		.13½	
64 Gasoline	.13		.14		.14	
66 Gasoline	.16		.16½		.16½	
68-70 Gasoline	.17		.17¾		.18	

NATURAL GASOLINE

CHICAGO DIST. (Based on Group 3)—	Nov. 13		Nov. 6		Oct. 30	
Grade A, 72-78 under 375 e.p., rec. 90%	.06¾	.07¼	.07¼	.07½	.07¾	.08
Grade B, 76-82, 375 end point, rec. 85%	.06½	.07	.07¼	.07½	.07¾	.08
Grade C, 80-88, 350 end point, rec. 78%	.06	.06½	.06¾	.07¼	.07¼	.07¾
OKLAHOMA (Group 3)—						
Grade A, 72-78, under 375 e.p., rec. 90%	.06½	.06¾	.07	.07¼	.07½	.07¾
Grade B, 76-82, 375 end point, rec. 85%	.06¼	.06½	.06¾	.07¼	.07¼	.07¾
Grade C, 80-88, 350 end point, rec. 78%	.06	.06¼	.06½	.07	.07¼	.07¾
Grade D, 88-92, 350 end point	.06	.06¼	.06½	.07	.07¼	.07½
NORTH TEXAS—						
80-84 compression	.05¾	.06¼	.06½	.06¾	.07	.07¼
84-90 compression	.05¾	.06¼	.06½	.06¾	.07	.07¼
72-76 absorption	.06¼	.06¾	.07	.07¼	.07¼	.07½
76-82 absorption	.06¼	.06¾	.07	.07¼	.07¼	.07½
NORTH LOUISIANA—						
Grade B	.07					
Grade C	.06¾					

MOTOR NATURAL GASOLINE (BLEND)

CHICAGO DIST. (Based on Group 3)—	Nov. 13		Nov. 6		Oct. 30	
60-62 450 end point	.06¼	.06½	.06¾	.07	.06½	.07
64-66 450 end point	.06¼	.06½	.06¾	.07	.06½	.07
OKLAHOMA (Group 3)—						
60-62 450 end point	.06	.06¼	.06	.06¼	.06¼	.06¾
64-66 437 end point	.06¼	.06½				
68-70 430-435 end point	.06¼	.06½	.06½	.06¾	.06¾	.07
NORTH TEXAS—						
58-62 440 end point	.06	.06⅛	.06	.06⅛	.06¼	.06⅜
58-60 450 end point	.06	.06⅛	.06	.06⅛	.06¼	.06⅜
PENNSYLVANIA—						
*60-62	.10		.10½		.10½	
*64-66	.10		.10½		10½	
*66-68	.10		.10½		.10½	
*68-70	.10		.10½		.10½	

*At Sistersville, W. Va.

BURNING OIL

CHICAGO DIST. (Based on Group 3)—	Nov. 13		Nov. 6		Oct. 30	
41-43 water white Kerosene	.04	.04¼	.04	.04¼	.04⅛	.04⅜
42-44 water white Kerosene	.04¼	.04½	.04¼	.04½	.04¼	.04½
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04⅛	.04¼	.04	.04¼	.04	.04⅛
42-43 water white Kerosene	.04⅜	.04⅝	.04¼	.04½	.04⅛	.04¼
44-46 Kerosene Distillate	.05¼	.05½	.05¼	.05½	.05	.05¼
KANSAS—						
41-43 water white Kerosene	.04½	.04¾	.04½	.04¾	.04½	.04¾
NORTH TEXAS—						
41-43 water white Kerosene	.03¾	.04	.03¾	.04	.03¾	.04
41-43 prime white Kerosene	.03½	.03⅝	.03½	.03⅝	.03½	.03⅝
40-42 prime white Distillate	.03¼	.03½	.03¼	.03½	.03¼	.03½
42-44 water white Kerosene	.03¾	.04	.03¾	.04	.03¾	.04
NORTH LOUISIANA—						
41-43 prime white Kerosene	.04½	.04¾	.04¼	.04½	.04	.04¼
42-43 water white Kerosene	.04½	.04¾	.04¼	.04½	.04	.04¼
ROCKY MOUNTAIN STATES—						
40-42 prime white Kerosene	.07		.06¾		.06¾	
PENNSYLVANIA—						
43 Kerosene prime white	.06¾		.07		.07	
45 Kerosene water white	.07		.07¼	.07½	.07¼	.07½
46 Kerosene water white	.07¾		.07¾	.08	.07¾	.08
47 Kerosene water white	.08		.08½		.08½	
36 Miners' Neutral	.07		.07		.07	

FUEL OILS

CHICAGO DIST. (Based on Group 3)—	Nov. 13		Nov. 6		Oct. 30	
24-26 Fuel Oil (sellers' cars, Group 3)	.70	.75	.75	.80	.80	.85
22-24 (El Dorado)	.65	.70	.72½	.77½	.75	.80
18-20 (Smackover)	.60	.65	.60	.65	.65	.70
32-36 Gas Oil	.02⅛	.02⅜	.02¼	.02½	.02¼	.02½
38-40 Straw distillate	.03¼	.03½	.03¼	.03½	.03¼	.03½
KANSAS—						
24-26 Fuel Oil	.85	.90	1.00	1.05	1.00	1.05
32-36 Gas Oil	.02½	.02¾	.02⅝	.02¾	.02¾	.03
38-40 Distillate	.03½	.03¾	.03½	.03¾	.03½	.03¾
OKLAHOMA (Group 3)—						
24-26 Fuel Oil (buyers' cars)	.65	.70	.72½	.77½	.75	.80
24-26 Fuel Oil (sellers' cars)	.70	.75	.77½	.82½	.80	.85
28-30 Fuel Oil (sellers' cars)	.80	.85	.85	.90	.90	.95
32-36 Gas Oil	.02¼	.02½	.02¼	.02½	.02¼	.02½
38-40 Straw Distillate	.03	.03¼	.03	.03¼	.03	.03¼
NORTH TEXAS—						
24-26 Fuel Oil	.60	.65	.60	.65	.65	.70
26-30 Fuel Oil	.65	.70	.65	.70	.70	.75
32-36 Gas Oil	.02¼	.02¾	.02¼	.02⅝	.02¼	.02⅝
36-38 Gas Oil	.02½	.02⅝	.02½	.02⅝	.02½	.02⅝
38-40 Straw Distillate	.02⅞	.03⅛	.02⅞	.03⅛	.02⅞	.03⅛
NORTH LOUISIANA—						
20-22 Fuel Oil	.65	.70	.70	.75	.70	.75
32-36 Gas Oil	.02¾	.03	.02¾	.03	.02¾	.03
38-40 light straw distillate	.03		.03		.03	
GULF COAST (South Texas)—						
Gas oil	.03	.03½	.03	.03½	.03	.03½
Fuel oil	1.10	1.15	1.10	1.15	1.10	1.15
PENNSYLVANIA—						
30-34 Fuel Oil	.05¼		.05¼		.05¼	
36-40 Fuel Oil	.05½		.05¾		.05¾	
34 Neutral	.08		.08		.08	

ROAD OILS

OKLAHOMA (Group 3)—	Nov. 13		Nov. 6		Oct. 30	
50-60 Asphaltic content	.95	1.05	.95	1.05	.95	1.05
60-70 Asphaltic content	1.05	1.15	1.05	1.15	1.05	1.15
CHICAGO DIST. (Based on Group 3)—						
50-60 Asphaltic content (Group 3)	1.00		1.00		1.00	

NEUTRAL OILS

OKLAHOMA (Group 3)—	Nov. 13		Nov. 6		Oct. 30	
Pale Neutrals:						
70-80 vis., 2½ color, 20-25 cold test	.04	.04¼	.04	.04¼	.04¼	.04½
100 vis., 2 color, 20-25 cold test	.05	.05½	.05¾	.06¼	.06	.06½
100 vis., 3 color, 20-25 cold test	.04¾	.05	.05¼	.05¾	.05½	.06
150 vis., 3 color, 20-25 cold test	.09½	.10	.11¼	.11¾	.11½	.12
150 vis., 4 color, 20-25 cold test	.09	.09½	.10¾	.11¼	.11	.11½
180 vis., 4 color, 23-28 cold test	.11¼	.11¾	.13	.13½	.13¼	.13¾
180 vis., 3 color, 23-28 cold test	.12	.12½	.13¾	.14¼	.14	.14½
200 vis., 3 color, 23-28 cold test	.13	.13½	.14¾	.15¼	.15	.15½
200 vis., 4 color, 23-28 cold test	.12¼	.12¾	.14	.14½	.14¼	.14¾
220 vis., 3 color, 25-30 cold test	.14	.14½	.15¾	.16¼	.16	.16½
220 vis., 4 color, 25-30 cold test	.13¼	.13¾	.15	.15½	.15¼	.15¾
240 vis., 3 color, 25-30 cold test	.15	.15½	.17	.17½	.17½	
240 vis., 4 color, 25-30 cold test	.14¼	.14¾	.16	.16½	.16¼	.16¾
280 vis., 3 color, 25-30 cold test	.17½	.18	.19¼	.19¾	.19½	.20
280 vis., 4 color, 25-30 cold test	.16½	.17	.18¼	.18¾	.18½	.19
300 vis., 3 color, 25-30 cold test	.18	.18½	.19¾	.20¼	.20	.20½
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.10½	.11	.12¼	.12¾	.12½	.13
180 vis., 6 color, 23-28 cold test	.09¾	.10¼	.11½	.12	.11¾	.12¼
200 vis., 5 color, 23-28 cold test	.11½	.12	.13¼	.13¾	.13½	.14
200 vis., 6 color, 23-28 cold test	.10¾	.11¼	.12½	.13	.12¾	.13¼
220 vis., 5 color, 25-30 cold test	.12½	.13	.14¼	.14¾	.14½	.15
220 vis., 6 color, 25-30 cold test	.11¾	.12½	.13½	.14¼	.13¾	.14½
240 vis., 5 color, 25-30 cold test	.13½	.14	.15¼	.15¾	.15½	.16
240 vis., 6 color, 25-30 cold test	.12¾	.13¼	.14½	.15	.14¾	.15¼
280 vis., 5 color, 25-30 cold test	.15½	.16	.17¼	.17¾	.17½	.18
280 vis., 6 color, 25-30 cold test	.14½	.15	.16¼	.16¾	.16½	.17
300 vis., 5 color, 25-30 cold test	.14½	.15	.16¼	.16¾	.16½	.17
150-160 vis., 1 color, 40-50 cold test	.04½	.05	.06¼	.06¾	.06½	.07
190-200 dark green, 40-50 cold test	.03½	.04	.05¼	.05¾	.05½	.06
600 steam refined	.16		.16		.16	
590-600 Bright Stock	.23	.26	.25		.28	
600-610 Bright Stock	.28	.31	.28		.33	
Waxes:						
124-126 White Crude Scale Wax	.02¾	.02⅞	.02¾	.02⅞	.02¾	.02⅞

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

PENNSYLVANIA—	Nov. 13	Nov. 6	Oct. 30
150, 3 color	.21	.21	.21
180, 3 color	.23½	.23¾	.24
200, 3 color	.25	.25¾	.25¾
220, 3 color	.28	.28¾	.28¾
600, steam refined	.11	.10¾	.10¾
635, steam refined	.13	.13	.12½
650, steam refined	.14½	.14½	.14
600, Pennsylvania flash	.16½	.16	.16
630, Pennsylvania flash	.20½	.20½	.20½
*550, E filtered	.14	.14	.14
*600, E filtered	.16¼	.16	.16
600, E filtered	.15	.14¼	.13¾
600, D filtered	.21	.20½	.20½
550, E filtered	.13½	.13½	.13½
550, D filtered	.16	.16	.16
Pennsylvania Bright Stock	.31½	.31½	.31½
†122-124 White Crude Scale Wax	.03¼	.03¼	.03¼
†124-126 White Crude Scale Wax	.03⅜	.03⅜	.03⅜
300 Mineral Seal	.07¾	.07¾	.07¾

*At Warren, Penn. †At New York City.

GULF COAST (South Texas)—	Nov. 13		Nov. 6		Oct. 30	
Lubricating Stocks:						
Zero Black	.06	.07	.06	.07	.06	.07
No. 2 color, 100 vis., pale oil	.08½	.09½	.08½	.09½	.08	.09
No. 2½ color, 150 vis., pale oil	.10	.11	.10	.11	.09½	.11
No. 3 color, 200 vis., pale oil	.11	.12	.11	.12	.11	.12
No. 3½ color, 300 vis., pale oil	.14	.15	.14	.15	.14	.15½
No. 3½ color, 500 vis., pale oil	.15	.16	.15½	.16	.16	.17
No. 3½ color, 750 vis., pale oil	.21	.23	.21½	.23	.23	.24
No. 1½ color, 150 vis., pale, filtered	.21	.22½	.21	.22	.20½	.22
No. 2 color, 200 vis., pale, filtered	.24	.25	.24	.25	.23½	.25
No. 3½ color, 500 vis., pale, filtered	.32	.33	.31	.33	.31	.33
No. 3½ color, 750 vis., pale, filtered	.38	.40	.39	.40	.40	.41
No. 5 color, 200 vis., red oil	.10	.11	.10	.11	.10	.11
No. 5 color, 300 vis., red oil	.11½	.12½	.12	.13	.12	.13
No. 5 color, 500 vis., red oil	.13	.14	.13½	.14½	.14	.15
No. 5 color, 750 vis., red oil	.20	.21	.20	.21½	.21	.22

NEW YORK DOMESTIC MARKET

	Nov. 13	Nov. 6	Oct. 30
Motor Gasoline:			
Greater New York, in steel barrels	.16½	.16½	.16½
New York State (outside Greater New York and New England, tank wagon	.16½	.16½	.16½
New Jersey, tank wagon	.16½	.16½	.16½
V.M.P. Naphtha, in steel barrels	.15½	.15½	.15½
Kerosene:			
Greater New York, tank wagon	.14	.14	.14
New York State (outside Greater New York and New England, tank wagon	.14	.14	.14
Gasoline in bulk, delivered at N. Y.	.08¼	.09½	.09½
New Jersey, tank wagon	.14	.13	.13
Lubricating Oil (Industrial) at refinery, Bayonne, N. J.:			
Cylinder, extra light filtered, in barrels	.36½	.36½	.36½
Cylinder, light filtered, in barrels	.31½	.31½	.31½
Cylinder, Bright Stock	.44	.44	.44
Cylinder, steam refined (600)	.21½	.21½	.21½
Black, in bulk	.09½	.09½	.09½
Bloomless, white, 30-31 gravity, 170 vis	.43	.43	.43
Bloomless, 885 specific gravity	.16½	.16½	.16½
Red Paraffin:			
170 viscosity	.18½	.18½	.18½
212 viscosity	.20	.20	.20
265 viscosity	.22	.22	.22
295 viscosity	.25	.25	.25
Paraffin, 903 specific gravity	.22½	.22½	.22½
*Fuel Oil:			
Bunker Oil, 14 plus, delivered in barges, bbl.	1.45	1.45	1.45
Diesel Oil, at refinery, gallon	.03¾	.03¾	.03¾
Furnace oil, tank wagon, gallon	.10	.10	.10
Gas Oil, delivered in New York	.04¼	.04¼	.04¼
Wax, fully refined:			
120-122 a.m.p.	.03⅜	.03⅜	.03⅜
125-127 a.m.p.	.03¾	.03⅜	.03¾
130-132 a.m.p.	.04¼	.04¼	.04¼
135-137 a.m.p.	.05¼	.05¼	.05¼

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

	Nov. 13	Nov. 6	Oct. 30
Motor Gasoline, in cases, gallon	.24.15	.25.15	.25.15
Motor Gasoline, U. S. Navy, spec., gallon	.10.50	.11.50	.11.50
Naphtha, 60° F., 59-61 spec. grav	.12.00	.12.50	.12.50
Naphtha, 60° F., 63-66 spec. grav	.14.00	.14.50	.14.50
Naphtha, 60° F., 66-68 spec. grav	.15.50	.16.00	.16.00
Kerosene:			
Standard white, in bulk, gallon	.07	.07	.07
Standard white, in barrels, gallon	.14	.14	.14
Standard white, in cases, gallon	.16.9	.16.9	.16.9
Water white, in bulk, gallon	.08	.08	.08
Water white, in barrels, gallon	.15	.15	.15
Water white, in cases, gallon	.17.9	.17.9	.17.9

CRUDE OIL PRICES

November 8.—Prairie Oil and Gas Co. reduced Kansas, Oklahoma and North Texas crudes from 15 to 50 cents and announced that it would increase its runs. Magnolia Petroleum Co. reduced its schedule of prices for the same area with the exception of 40° and above from 10 to 15 cents. These changes with exception of Humble Oil and Refining Co. and The Texas Co. met by major purchasing companies on same date. Ohio Oil Co. reduced Illinois and Princeton crudes 25 cents. Magnolia Petroleum Co. reduced Corsicana heavy 10 cents.

November 9.—The Texas Co. met Prairie prices in Kansas, Oklahoma and North Texas. Ohio Oil Co. and Midwest Refining Co. reduced Wyoming and Montana crudes 30 to 40 cents with the exception of Sunburst, Mont., where no change was made. Ohio Oil Co. reduced Lima, Indiana, Waterloo, Plymouth and Wooster crudes 25 cents. Imperial Oil, Ltd. reduced Petrolia and Oil Springs (Canada) crudes 25 cents.

November 13.—Joseph Seep Purchasing Agency reduced all grades of Pennsylvania crudes 15 cents. Cabell crude was reduced 15 cents and Somerset light and medium crudes 10 cents.

November 14.—Joseph Seep Purchasing Agency reduced Corning crude 20 cents.

Oklahoma and Kansas

Below 33°	$ .75
33° to 39.9°	1.00
40° and above	1.25
Magnolia Petroleum Co.:	
Below 28°	.40
28° to 30.9°	.60
31° to 32.9°	.75

Arkansas and North Louisiana

Caddo, 38° and above	$1.25
35° to 37.9°	1.15
32° to 34.9°	1.10
Below 32°	.75
Homer, 35° and above	1.25
33° to 34.9°	1.15
31° to 32.9°	1.10
Below 31°	.75
Haynesville, 33° and above	1.10
Below 33°	1.00
El Dorado, 33° and above	1.25
Below 33°	1.10
Bull Bayou, 38° and above	1.15
35° to 37.9°	1.05
32° to 34.9°	1.00
De Soto	1.25
Crichton	.90
Bellevue	.75
Smackover, 26° and above	.75
25° to 25.9°	.63
24° to 24.9°	.50
Below 24°	.40
*Stephens, Ark., 30° and above	.85
28° to 29.9°	.80
26° to 27.9°	.75
23° to 25.9°	.65
Below 23°	.50

*Posted by Atlantic Oil Producing Co.

Wyoming and Montana

Rock Creek (Wyo.)	$ .60
Salt Creek	.60
Big Muddy	.45
Mule Creek	.45
Grass Creek	.95
Elk Basin	.95
Lance Creek	.80
Osage	.80
Cat Creek (Mont.)	.95
Sunburst (Mont.)	.70
Greybull and Torchlight	.95
Hamilton Dome	.52½

Lander and Lost Soldier based on contracts covering entire production of fields.

North Texas and North Central Texas

Corsicana light	$ .75
Corsicana heavy	.40
Mexia	1.00
Currie	1.00
Powell	.75

Moran, Burkburnett, Electra, Archer County, Stephens County, Strawn, Ranger, Desdemona, Pioneer and Young County.

Below 33°	$ .75
33° to 39.9°	1.00
40° and above	1.25
Humble Oil and Refining Co.:	
Below 30°	.80
32° to 32.9°	.90
33° to 35.9°	1.00
36° to 38.8°	1.15
39° and above	1.30
Magnolia Petroleum Co.:	
Below 28°	.40
28° to 30.9°	.60
31° to 32.9°	.75
33° to 39.9°	1.00
40° and above	1.25

Gulf Coast

Gulf Pipe Line Co., Goose Creek, Hull, Sour Lake, Batson, Saratoga, Spindletop, Orange, Vinton, Edgerly, Jennings	$1.00
Grade "B," Pierce Junction, Blue Ridge	.90
The Sun Pipe Line Co., Grade "A," Humble, Hull, Goose Creek, Orange, Spindletop, Saratoga, Batson, Dayton, Sour Lake	1.00
Humble Pipe Line Co., Goose Creek, Hull, West Columbia, Orange	1.00
Grade "B," Pierce Junction	.90
Texas Pipe Line Co., Humble, West Columbia, Orange, Sour Lake, Saratoga, Batson, Vinton, Jennings, Markham	1.00
Sinclair Pipe Line Co., West Columbia, Damon Mound	1.00

California

14° to 19.9°	$ .60
20° to 20.9°	.61
21° to 21.9°	.62
22° to 22.9°	.63
23° to 23.9°	.64
24° to 24.9°	.65
25° to 25.9°	.66
26° to 26.9°	.67
27° to 27.9°	.68
28° to 28.9°	.69
29° to 29.9°	.70
30° to 30.9°	.71
31° to 31.9°	.72
32° to 32.9°	.73
33° to 33.9°	.74
34° to 34.9°	.75
35° gravity and above	.76

Eastern States

Penna Grade Oil in New York Transit Lines	$2.60
Bradford District Oil in National Transit Lines	2.60
Penna Grade Oil in National Transit Lines	2.35
Penna Grade Oil in South West Pa. Pipe Lines	2.35
Penna Grade Oil in Eureka Pipe Line Lines	2.35
Penna Grade Oil in Buckeye Pipe Line Lines	2.35
Corning Grade Oil in Buckeye Pipe Line Lines	1.25
Cabell Grade Oil in Eureka Pipe Line Lines	1.20
*Somerset Medium Oil in Cumberland Pipe Line Lines	1.15
*Somerset Light Oil in Cumberland Pipe Line Lines	1.25
Ragland Grade Oil in Cumberland Pipe Line Lines	.75
Lima	1.43
Wooster	1.25
Illinois	1.22
Indiana	1.23
Princeton	1.22
Plymouth	.60
Waterloo	.70
†Petrolia, Canada	2.03
†Oil Springs, Canada	2.10

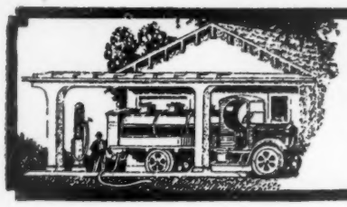
*Somerset oil commands 6 cents over the above posted price.

†Plus Government bounty of 52½c.

Mexican Crude

*Tuxpam (f.o.b. Mexican ports)	$ .80
†Panuco (f.o.b. Mexican ports)	.50
Tuxpam (New York)	1.34
Panuco (New York)	.92

*Plus 29.38c tax. †Plus 16.59c tax. Prices based on contracts.



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, Nov. 13

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Chicago district	12.0	..	14.0	10.0
Tank wagon prices on Jan. 25, 1921, down 2c on g., 3c on k., Feb. 1, both down 2c; April 28, both down 3c; July 25 g. down 2c; Oct. 15. g. up 1c; Oct. 23, k. up 1c; Nov. 9, g. up 1¼c; k. 1c; April 10, 1922, g. up 1½c; May 8, g. up 1c; June 27, both up 1c; July 19, g. down 2c; k. down 1c; Oct. 10, g. down 2c; Oct. 31, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14 g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c.				
Decatur, Ill.	12.2	..	14.2	10.5
East St. Louis.	10.85	..	13.1	9.6
Joliet	11.6	..	13.6	10.7
Peoria	12.2	..	14.2	10.5
Quincy	12.2	..	14.2	10.3
Davenport, Ia.	14.7	..	16.7	10.9
Des Moines	12.5	..	14.5	10.9
Keokuk	12.5	..	14.5	10.9
Sioux City	12.0	..	14.0	10.5
Duluth, Minn.	13.2	..	15.2	11.0
Minneapolis	12.9	..	14.9	11.6
La Crosse, Wis.	13.2	..	15.2	11.4
Milwaukee	12.0	..	14.0	10.2
Madison	12.3	..	14.3	10.5
Detroit, Mich.	10.8	..	12.8	10.5
Grand Rapids	12.7	..	14.7	11.1
Saginaw	12.9	..	14.9	11.3
Evansville, Ind.	14.2	2.0	16.2	10.5
Fort Wayne	14.4	2.0	16.4	10.9
Indianapolis	14.2	2.0	16.2	10.7
South Bend	15.0	2.0	17.0	10.9
Fargo, N. D.	15.9	1.0	17.9	13.6
Huron, S. D.	16.0	2.0	18.0	12.1
Sioux Falls	15.5	2.0	17.5	11.6
*Kansas City	11.9	1.0	13.9	9.3
Springfield	13.8	..	15.8	10.2
St. Louis	11.6	..	13.9	10.0
*St. Joseph	12.3	.5	14.3	10.2
Wichita, Kans.	11.8	..	13.8	9.8

*City tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Pittsburgh, Pa.	16.0	*	21.0	14.0
Philadelphia	16.0	*	21.0	14.0
Scranton	16.0	*	21.0	14.0
Allentown	16.0	*	21.0	14.0
Altoona	16.0	*	21.0	14.0
Dover, Del.	17.0	1.0	20.0	14.0
Wilmington	17.0	1.0	20.0	14.0
Providence, R. I.	16.5	..	19.0	14.0
Springfield, Mass	15.5	..	18.0	14.0
Worcester	15.5	..	18.0	14.0
Boston	15.5	..	18.0	14.0
Hartford, Conn.	17.5	1.0	20.0	14.0
New Haven	17.5	1.0	20.0	14.0

*Pennsylvania tax of 2 cents and Connecticut tax of 1 cent are collected by the dealer and paid by him direct to the State.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Atlanta, Ga.	16.0	3.0	18.0	15.0
Augusta	18.0	3.0	20.0	15.0
Macon	18.0	3.0	20.0	15.5
Savannah	16.0	3.0	18.0	14.0
Birmingham, Ala.	16.0	2.0	18.0	15.5
Mobile	16.0	2.0	17.0	14.5
Montgomery	16.0	2.0	18.0	16.0
Clarksdale, Miss	14.0	1.0	16.0	14.0
Jackson	14.0	1.0	16.0	11.0
Natchez	13.5	1.0	15.5	13.5
Vicksburg	13.5	1.0	15.5	13.5
Jacksonville, Fla	16.0	3.0	18.0	14.0
Miami	18.0	3.0	20.0	15.5
Pensacola	16.0	3.0	18.0	14.5
Tampa	16.0	3.0	18.0	14.0
Covington, Ky.	16.0	1.0	18.0	13.0
Lexington	15.0	1.0	17.0	14.0
Louisville	14.0	1.0	16.0	13.0

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Denver, Colo.	13.0	2.0	15.0	12.5
Glenwood Spgs.	20.0	2.0	....	16.5
Pueblo	16.0	2.0	18.0	12.5
Basin, Wyo.	16.0	1.0	....	13.0
Casper	14.0	1.0	16.0	11.0
Cheyenne	15.5	1.0	17.5	13.0
Cody	17.0	1.0	....	14.0
Lander	16.0	1.0	....	13.0
Billings, Mont.	18.5	2.0	20.5	14.5
Butte	20.0	2.0	22.0	15.0
Great Falls	20.0	2.0	22.0	16.0
Helena	20.0	2.0	22.0	16.0
Miles City	19.5	2.0	21.5	15.5
Boise, Idaho	20.0	3.0	22.0	18.0
Salt Lake, Utah	19.0	2.5	21.0	15.5
Ogden	19.0	2.5	21.0	15.5
Albuquerque, N. M.	18.0	1.0	20.0	15.5

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Newark, N. J.	15.5	..	....	14.0
Atlantic City	15.5	..	....	14.0
Annapolis, Md.	16.0	1.0	19.0	14.0
Baltimore	16.0	1.0	19.0	13.0
Cumberland	16.0	1.0	19.0	15.0
Washington, D. C.	15.0	..	18.0	13.5
Norfolk, Va.	18.0	3.0	20.0	18.0
Petersburg	18.0	3.0	20.0	14.5
Danville	18.0	3.0	20.0	15.5
Richmond	18.0	3.0	20.0	13.5
Roanoke	18.0	3.0	20.0	15.0
Keyser, W. Va.	17.0	2.0	....	15.0
Charleston	17.0	2.0	....	13.5
Parkersburg	17.0	2.0	....	12.0
Wheeling	17.0	2.0	....	13.5
Charlotte, N. C.	18.0	3.0	....	14.5
Hickory	18.0	3.0	....	15.0
Mt. Airy	18.0	3.0	....	14.5
Salisbury	18.0	3.0	....	15.0
Charleston, S. C.	18.0	3.0	....	12.5
Columbia, S. C.	18.0	3.0	20.0	14.5

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Dallas, Tex.	7.0	1.0	10.0	8.0
Fort Worth	7.0	1.0	9.0	10.0
Houston	14.0	1.0	18.0	11.0
San Antonio	7.0	1.0	10.0	9.0
El Paso	12.0	1.0	15.0	12.0
Muskogee, Okla.	12.0	1.0	16.0	9.0
Oklahoma City.	12.0	1.0	15.0	9.0
Tulsa	11.0	1.0	14.0	9.0
Ft. Smith, Ark.	15.0	3.0	18.0	11.0
Little Rock	15.0	3.0	18.0	12.0
Texarkana	15.0	3.0	18.0	11.0

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
New Orleans, La	11.5	1.0	14.5	11.0
Alexandria	12.5	1.0	15.5	12.0
Baton Rouge	11.0	1.0	14.0	10.5
Lake Charles	12.5	1.0	15.5	12.0
Shreveport	12.5	1.0	15.5	12.0
Memphis, Tenn.	14.0	2.0	17.0	13.0
Chattanooga	14.5	2.0	17.5	13.5
Knoxville	15.5	2.0	18.5	14.0
Nashville	14.5	2.0	17.5	13.5
Bristol	16.0	2.0	19.0	14.5
Little Rock, Ark	15.5	3.0	18.5	12.0
West Helena	15.5	3.0	18.5	12.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Albany, N. Y.	14.5	..	17.0	13.0
*New York	15.5	..	17.5	14.0
Buffalo	14.5	..	17.5	14.0
Rochester	14.5	..	17.0	13.0
Syracuse	14.0	..	16.0	11.0
Boston, Mass.	14.5	..	17.0	12.0
Providence, R. I.	15.5	..	19.0	14.0
Augusta, Me.	15.5	1.0	20.0	14.0
Manchester	15.5	1.0	20.4	14.0
Burlington, Vt.	15.5	1.0	20.0	14.0

*Price in steel barrels.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
All Ohio points.	17.0	..	19.0	13.0

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
San Francisco.	13.0	2.0	16.0	15.5
Los Angeles	12.0	2.0	16.0	16.5
Fresno	13.5	2.0	16.5	17.5
Reno, Nev.	16.5	2.0	19.5	19.0
Portland, Ore.	15.0	3.0	18.0	16.5
Seattle, Wash.	13.0	1.0	16.0	16.5
Tacoma	13.0	1.0	16.0	16.5
Spokane	17.0	1.0	20.0	16.5
Phoenix, Ariz.	19.0	3.0	22.0	21.5
Honolulu, H.	13.5	..	16.5	17.5
Juneau, Alaska	14.5	..	17.5	18.0

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Omaha	14.25	..	16.25	10.50
Crawford	15.0	..	.....	11.25
McCook	15.75	..	17.75	12.00
Norfolk	15.75	..	16.75	11.00
North Platte	15.75	..	17.75	11.75
Scotts Bluff	15.25	..	17.25	11.25

TANK WAGON CHANGES

Effective November 3, Standard Oil Co. of Kentucky reduced the kerosene tank wagon and service station prices 1 cent at Atlanta.

Effective November 5, Standard Oil Co. of Kentucky reduced the gasoline tank wagon and service station prices 2 cents at Atlanta, Ga.

Effective November 7, the Magnolia Petroleum Co. reduced the gasoline tank wagon price 4 cents and service station price 3 cents at San Antonio. Continental Oil Co. reduced gasoline tank wagon and service station prices 1 cent in Colorado, with exception of Denver, where the reduction was 2 cents.

Effective November 10, Standard Oil Co. of Indiana made a general reduction of 2 cents in gasoline tank wagon and service station prices. No change was made at Kansas City, Detroit, Des Moines and Minneapolis and several small towns. The reduction was 1.4 cents at Chicago and there were several other points where the reduction was not 2 cents. The reduction was ½ cent in St. Louis. In South Dakota no change was made in the tank wagon price and the service station price was advanced 2 cents. Continental Oil Co. reduced the gasoline tank wagon and service station prices 1 cent in Utah.

Effective November 12, Standard Oil Co. of New Jersey reduced the gasoline tank wagon and service station prices 1 cent in entire territory. Standard Oil Co. of New York made a similar reduction in its territory. Due to error in information it was stated in last week's issue that the Standard of New York advanced kerosene tank wagon price 1 cent in its territory on November 6. There was no advance made in that territory on that date.

Effective November 12, Standard Oil Co. of Kentucky advanced kerosene tank wagon price 1 cent in entire territory with the exception of Kentucky, where no change was made.

CHESTER GRANT MAY BE OFFERED TO EUROPE

(Continued from Page 24)

an agreement within nine months after the inception of the negotiations, the future of Mosul should be referred to the League of Nations.

The Angora Government has already expressed the view that the discussions should be deferred until the powers had ratified the Lausanne treaty and that the place of meeting should be Constantinople. It it unlikely, however, that Great Britain will accede to either of these proposals.

The Cabinet's desire being to reach a settlement as soon as possible, the delegates to the proposed conference will endeavor to reach a compromise between the Turkish Government's contention that the population of Mosul is largely Turkish and that it should form a part of the Turkish Republic, and the British claim that the population is principally Arab, and for this reason and because of geographical and defensive considerations Mosul constitutes an integral part of Mesopotamia.

Great Britain holds the mandate for Mesopotamia under the League of Nations and is pledged eventually to grant that country its independence. It is for this reason, British officials say, that the Government must safeguard Mesopotamia's interests against the Turkish claims.

Companies Reported Making Joint Test Near Linares, Mex.

At the hacienda known as Popote, near Linares, Mex., a test well is being drilled jointly by a number of important companies, in order to gain knowledge of the formations in this practically virgin soil as regards oil production possibilities.

There has been (writes a correspondent of the London Oil News) much discussion among geologists as to the probability of oil in that section and this test, to a great degree, will have much to do with future operations between Tampico and the Rio Grande. Should the drillers bring in a well, even though it have no great production, it will invigorate the movement to try out that dream of many—that of connecting up the fields now existing in Mexico and those in Texas. It was said by oil men many years ago that some day there would be producing oil fields all the way from lower Vera Cruz to the Rio Grande.

Indeed, each of the big companies has thousands upon thousands of acres of oil land in the Aldamas district, Neuvo Leon, and not far distant from the United States border where geologists are all in agreement on the possibility of getting production. Although there have been several efforts to put down a test well between Tampico and the Rio Grande, this is the first venture that is assured of completion. Some 42 miles east of Vera Cruz the Freeport-Mexican began drilling two years ago and owing to certain difficulties stopped all work at a depth of 70 feet.

Linares lies some 220 miles northwest of Tampico. A few tests are being made north of Tampico, no great distance; but there will be intense activity should even the log be favorable for oil at the Linares test. This short distance from Tampico would revive big development and Tampico, of course, would benefit greatly from new pools discovered. The big companies having their refineries at Tampico, and transportation being much easier than in many places already developed, pipe lines would be hurried to connect with any new pool struck. When it is considered that Texas oil is pumped to Bayonne, New Jersey, two-thirds of the distance across the continent, it will be seen at a glance that oil fields struck on the east coast of Mexico will probably pipe to Tampico for both refining and shipping crude and its products.

In the near future it is quite likely, says the British publication, that the oil fields now limited to the vicinity of Tampico will extend from south of the Metlatoyuca test to far north in Tamaulipas and back into the great valley of the Panuco River and its branches to the mountains, perhaps high in them as they are in Wyoming.

"WORLD'S LARGEST GAS FIELD"

CHICKASHA, Nov. 12.—"Chickasha, the home of the largest gas field in the world," is to appear on every letter that leaves the Chickasha postoffice if the plan of Paul R. Riley, secretary of the Chickasha Chamber of Commerce, materializes. The Chamber of Commerce has made, through the local postal authorities, application to the Postmaster General, asking permission to use that slogan on the stamp cancelling machines in the local office.

SIGN GYPSY NAVAJO LEASE

WASHINGTON, D. C., Nov. 12.—The first lease for development of oil lands on the Navajo Reservation in New Mexico and Arizona has been signed at the Interior Department. The lease is with the Gypsy Oil Co. of Tulsa, Okla., covering 4,000 acres and provides that the company pay a cash bonus of $46,000 to the Indians in addition to a royalty of 12½ per cent on all oil produced.

The refiner who is trying to stem the tide of his losses in selling skimmed gasoline at less than its refinery cost, by complaining about the high price of crude or the low price of gasoline, would do well to learn how to make his fuel oil yield more good gasoline than he now gets from his crude—and of course at vastly lower cost than his skimmed gasoline

Formula: A double Dubbs Cracking Unit for each 1,000 bbls. per day of fuel oil

We contractually guarantee the results

Universal Oil Products Company
Owners of the Dubbs Process
208 South LaSalle Street Chicago

New Crude Prices Average 93c Bbl.

Powell Gives California Real Competition, But Both Undersell Oklahoma, Kansas and North Central Texas in Eastern Market

By James McIntyre

In reducing the price of crude oil in Kansas, Oklahoma and North-Central Texas on Thursday, November 8, and at the same time promising producers that it would materially increase its runs, the Prairie Oil & Gas Co. took a step toward the stabilization of the production end of the oil business in the Mid-Continent Field.

The company announced that commencing that day it would pay 75 cents for oil below 33 gravity; $1 for oil between 33 and 39.9 gravity, inclusive, and $1.25 for crude of 40 gravity and above. It briefly announced that "in connection with this morning's crude price changes, the Prairie Oil & Gas Co. states while it does not expect to engage in a large storage program, it will, for the present, materially increase the runs from its connections to such an extent that it hopes will give much relief to its regular patrons."

The Sinclair Crude Oil Purchasing Co., Gypsy Oil Co., Cosden Pipe Line Co., Producers & Refiners Corp., White Eagle Oil & Refining Co. and Pure Oil Co. all adopted the Prairie schedule, effective November 8. The Champlin Refining Co., The Texas Co., Marland Refining Co. and Skelly Oil Co. adopted on November 9.

The Magnolia Petroleum Co. announced that, effective November 8, it would pay the following scale of prices: Under 28 gravity, 40 cents; 28 to 30.9 gravity, 60 cents; 31 to 32.9 gravity, 75 cents; 33 to 39.9 gravity, $1, and 40 gravity and above, $1.25.

The Empire Pipe Line Co. adopted the Prairie schedule in all fields where it has connections excepting Healdton, where the Magnolia price was adopted.

Differ on Lower Grades

The Prairie and the Magnolia prices are the same on oil of 33 gravity and over, but there is a considerable difference in their prices on the lower-grade crudes. The Magnolia is the principal buyer in the southern Oklahoma fields, where there is a production of over 54,000 bbls. a day below 33 gravity and about 13,900 bbls. that will grade a little better than 33 degrees, and comes under the $1 classification. There is little crude in those fields that runs under 28 gravity, and on an average it might be said that the Magnolia's lower gravity scale is about 10 cents per barrel below that of the Prairie. However, they are not competitors for the heavier crudes in the Southern fields.

In making its announcement of a price reduction The Texas Co. stated it would take all the oil from its connections. The Magnolia has been buying 100 per cent since October 30. The Gypsy Oil Co. also announced that it would buy all the oil it ran.

Welcomed by Producers

The Prairie Oil & Gas Co.'s promise to materially increase runs counteracted the effect of its deep slash in its price schedule. To the average producer connected with its lines it meant an end to the uncertainty under which he has been producing oil for months. It was taken to mean that if operators continue along conservative lines and refrain from entering upon an active drilling campaign for more production the Prairie company will take all the oil it can consistently handle which, perhaps, may mean 100 per cent.

For months Oklahoma, Kansas and North Texas oil men have looked forward to the establishment of a bottom price that would warrant purchasing companies buying all the crude the wells could produce. The proration of runs, even at the comparatively high prices the Prairie and other companies maintained so long in the face of almost overwhelming California competition, was never satisfactory to producers. It meant a complete change in the plan of lease operation and actual financial loss on a very considerable percentage of leases in the three States.

Neither was the buy 50-per-cent and store-50-per-cent plan of some of the companies satisfactory.

Under the new price schedules the producer, in being able to sell all, or nearly all, of his potential production, may not realize more money from his crude than he did formerly, but it permits him to operate his leases normally and save them from all the perils that menace oil wells in the Mid-Continent subjected to complete or partial shutdown.

North and Central Texas

The crude production of the fields in North and Central Texas where oil is purchased on a gravity basis is almost altogether above 33 gravity and comes under the $1 classification. The quantity of crude below 33 is negligible, while the quantity 40 degrees and above is hardly worth being detailed. One offsets the other, and it is reasonably safe to say that the 112,000 bbls. a day of oil produced in those fields will average $1 per barrel under the present Prairie schedule.

Oklahoma

In the Oklahoma fields where there are many grades and fractions of a grade of crude from below 28 degrees up to 44 degrees, the difficulty in classifying comes in the numerous instances where leases produce oil of a grade so close to the dividing line between the classification that it is hazardous to say offhand whether an oil is worth 75 cents or a dollar, in the lower grades, and $1 or $1.25 in the higher grades. It is easier to separate the top grade from the middle than it is to do justice to the oils hovering around 32.9 and 33 degrees. The case of Hewitt is an example. In the list run with this story a part of the Hewitt crude is rated in the 75 cent class, under the Prairie schedule. All Hewitt crude was at one time 34 degrees in gravity but now it is only by taking the greatest pains and using the most modern vapor-tight tanks that the crude can be kept at 33 degrees, and a portion of it is undoubtedly below 33. The same is true in Osage County where there is much oil that runs very close to the dividing line that means 25 cents per barrel gain or loss to the producer.

In presenting a list classifying the crudes under the Prairie price schedule we do so without claiming for it absolute accuracy. It may vary a little here and there, but it is believed it comes close to being correct as regards the most of the production in the different pools. Wilcox sand production which grades 40 degrees and above is given in bulk at 5,000 barrels. It is found mostly in Osage, Creek and Okmulgee Counties.

Out of a total production of 387,925 barrels in Oklahoma, 112,335 barrels would bring 75 cents per barrel at the Prairie price. It has an indicated value of $84,251.25. The middle grade from 33 to 39.9 degrees includes 214,465 barrels a day, valued at $214,465, while the grade 40 degrees and above includes 61,125 bbls. worth to the producers, $76,406.25. The total value of the crude under the Prairie's classifications is given at $375,122.50, or an average of 96.7 cents per barrel.

Kansas

In classifying Kansas crude a slightly better average grade of oil is met than in Oklahoma. Oklahoma crude averages no higher than 35 degrees, while Kansas crude will average 36 degrees. Outside the Covert-Sellers Pool in Marion County, there is no oil in Marion or Butler Counties that runs below 33 degrees gravity, and the crude produced in the Potwin and Cameron-Robinson Pools in Butler County, will run over 41 gravity and commands the top price. Greenwood County crude averages high, the Seely Pool, with 6,200 barrels a day, averaging 41 degrees and all the rest, excepting a very small amount carried as miscellaneous, will take the $1 price. Cowley and Elk crudes run 36 gravity. In the old fields, however, the gravity is low enough to put them all in the 75-cent class, although here and there one may find crude that will grade 33 degrees. The figures given in the accompanying table like those for Oklahoma, may be subject to a little revision, but they are fairly representative.

They show 8,325 barrels of 40 degrees and above, worth $10,406.25 at the new Prairie price; 51,525 barrels, between 33 and 39.9 degrees, worth $51,525 and 12,250 barrels below 33 degrees, worth $9,187.50. The 72,100 barrels a day credited to Kansas has a value, based on the Prairie prices, of $71,118.75 or an average of 98.6 cents per barrel.

Average Price 93 Cents

The new schedule makes the average price of crude in Kansas, Oklahoma, North Central Texas and East Central Texas 93 cents per barrel. This may vary a fraction of a cent. The total production of all fields under consideration is 903,205 barrels, and this oil is given a value of $839,991. The production under the different classifications includes 389,585 barrels at 75 cents per barrel; 377,990 barrels at $1 and 69,450 barrels at $1.25. In addition a $1.50 contract price is being paid by the Prairie and the Sinclair companies for crude produced by the Humphreys Oil Co. at Mexia, Currie and Powell. The value of Currie and Mexia oils is placed roughly at $53,000 per day; 75-cent grade at $292,188.75; the $1 grade at $377,990 and the $1.25 grade at $86,812.50 and the Prairie-Sinclair purchases in Powell at $30,000.

Compete With California?

The 903,205 barrels production under consideration is 125,000 barrels per day in excess of the total production of the California fields and 332,000 barrels per day in excess of the output of the three big high grade fields of the Pacific State, and at 93 cents per barrel it would seem that it could compete with California crude on the Atlantic Coast, but does it?

Undoubtedly Powell crude directly competes with California and there is a potential, if not an actual production of over 300,000 barrels there at this writing. Most of it is 75-cent crude. It runs around 37 degrees in gravity. All of this oil, save that sold on contract, at $1.50 per barrel can be piped to Gulf Ports and shipped in tankers to the Atlantic Coastal market as cheaply as good Cali-

(Continued on Page 94)

ESTIMATED PRODUCTION OF THE DIFFERENT CLASSIFICATIONS OF CRUDE IN OKLAHOMA

District—	Below 33°	33°-39.9°	40° and over
Washington County	7,000	.....	.....
Nowata-Rogers County	6,500	.....	.....
Burbank	.....	85,750	.....
Other Osage Fields	5,000	18,500	.....
Bird Creek, Owasso, etc.	4,700	.....	.....
Red Fork, Sand Springs, Turkey Mountain	.....	2,000	.....
Bixby, Leonard and Jenks	500	2,000	.....
Broken Arrow	.....	550	.....
Mounds, Beggs and Hamilton Switch and Youngstown	.....	11,000	.....
Bald Hill	.....	2,600	.....
Okmulgee and Morris	.....	2,400	.....
Tiger Flats, Henryetta and Schulter	.....	3,350	.....
Muskogee and Wagoner Counties	.....	1,600	.....
Wewoka	.....	15,500	.....
Deaner, Lyons, Okemah	.....	9,000	.....
Cushing and Shamrock	.....	24,000	.....
Glenn Pool, Sapulpa and Kiefer	9,500	.....	.....
Bristow, Kelleyville and Depew	19,000	27,000	.....
Eastern Bristow	5,400	.....	.....
Cleveland	.....	3,000	.....
Keystone and Jennings	.....	4,300	.....
Yale, Quay and Ingalls	.....	5,300	.....
March Pool (North Cushing)	.....	2,000	.....
Blackwell	.....	.....	2,000
Mervine	.....	675	675
Ponca City	.....	900	900
Tonkawa	.....	.....	46,100
Billings	.....	.....	550
Garber	.....	.....	5,900
Healdton	21,350	.....	.....
Hewitt	14,550	3,000	.....
Milroy-Fox	2,650	.....	.....
Brock	325	.....	.....
Graham	3,000	1,840	.....
Loco	2,500	.....	.....
Kilgore	220	.....	.....
Comanche	825	.....	.....
Duncan	.....	9,050	.....
Walters	1,200	.....	.....
Cement	2,125	.....	.....
Robberson	5,550	.....	.....
Sayre	.....	750	.....
Allen	440	.....	.....
Wilcox sand production in Osage, Creek and Okmulgee Counties	.....	.....	5,000
Total	112,335	214,465	61,125

Summary

Grades—	Prod.	*Price	*Indicated Value
40° and over	61,125	$1.25	$ 76,406.25
33° to 33.9°	214,465	1.00	214,465.00
Below 33°	112,335	.75	84,251.25
Total	387,925		$375,122.50

Average price per bbl. 96.7 cents.
*Based on Prairie Oil & Gas Co.'s price schedule.

PRODUCTION AND GRAVITY OF KANSAS CRUDE OILS

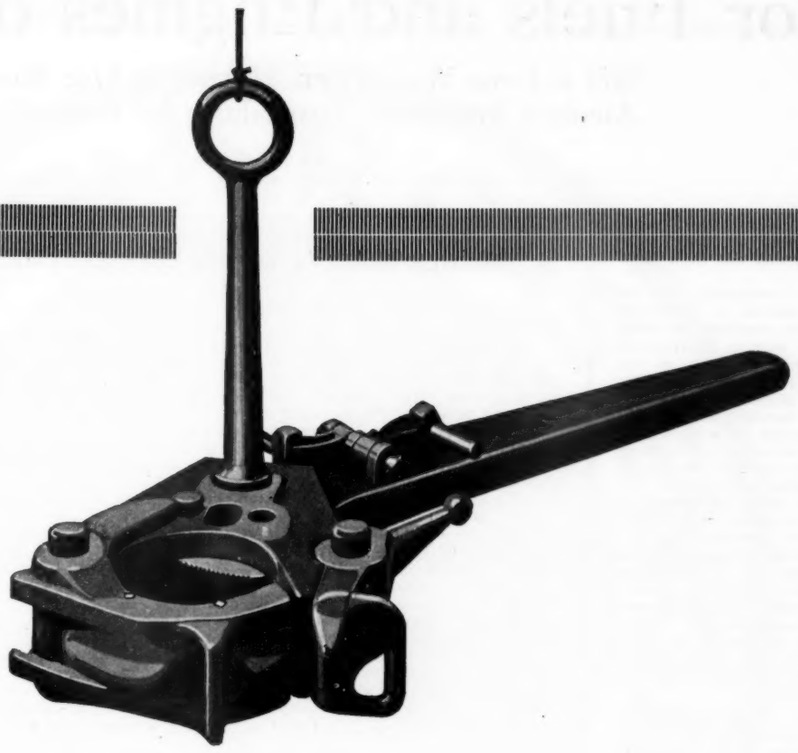
Marion County—	Prod.	Av. Grav. Deg.
Urschell Pool	3,250	33
Peabody	3,700	34
Covert-Sellers	1,150	32
Butler County—		
Elbing	4,600	34
Potwin	700	42
Cameron-Robinson	750	42
Wilson-Dunkle	3,100	33
Towanda	3,900	33
El Dorado	7,600	33
Fox Bush	5,650	39
Nuttle-Koogler	1,575	33
Sluss	550	36
Blankenship	1,100	39
North Augusta	1,100	35
South Augusta	2,150	35
Smock	300	36
Douglass	200	35
Leon-Weaver	1,525	39
Greenwood County—		
Virgil	4,325	38
Seely	6,200	41
Thrall-Burkett	4,300	39
Sallyards	1,450	38
Paulhamus	1,150	33
Teeter	675	40
Miscellaneous	100	30
Other Counties—		
Cowley	2,100	36
Elk	600	36
Old fields	11,000	*..

*Below 33°.

Summary

Grades—	*Price	Prod. Bbls.	*Value
40° and over	$1.25	8,325	$10,406.25
33° to 33.9°	1.00	51,525	51,525.00
Below 33°	.75	12,250	9,187.50
Total		72,100	$71,118.75

Average price per bbl., 98.6 cents.
*Based on Prairie Oil & Gas Co. price schedule.



AMPLE "TAKE-UP"

Note how the handle, acting as lever, rocks the toothed cam die outward.

An inch or more of "take-up" results, so that this tong continues to grip tightly as the tool joints wear down.

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GUIBERSON

BETTER BE SAFE THAN SORRY

Motor Fuels and Engines of the Future

Still a Long Way From Having to Use Shale Oil or Alcohol; Petroleum Possibilities far From Exhaustion.

By Harold Cary

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We are pretty scared about motor fuel—the men who use their automobiles every day and find them indispensable.

We read the newspapers. We see headlines about gasoline at a dollar a gallon. Under the headlines we learn than we are now burning up about 20 per cent more gasoline than we are bringing to the surface—at least that we mined half a billion barrels in 1922 and used up six hundred million. We realize that importing the stuff is going to cost us a lot of extra pocket money and we know that oil fields are exactly the opposite of being inexhaustible.

Reading a little deeper into the column under that scare headline we learn that the United States Geological Survey and the Bureau of Mines have figured out that at the present rate of consumption the precious liquid underground will last about 14 years more. And then where are we? Sometimes you hear a man, who doesn't know any better, say in an awed voice: "Why, that might mean an industrial revolution! This country is completely motorized."

Fears like that come from knowing half facts. You can sum it up quickly: The gasoline situation may be pretty bad, though even that is doubtful. But the motor fuel situation has an entirely different aspect, an aspect almost wholly cheerful.

Take first the fuel we are using and which we would like very much indeed to go on using for the next 50 years or so. The gasoline pessimists made their gloomiest predictions about six years ago. They said the geologists had learned from their elaborate studies exactly where on the earth you might have a chance to strike oil if you bored. The geologists could tell you where it was no use to bore, although of course they could not promise you results even in those spots where the surface indications were the best. They managed to make some kind of an estimate of the resources in the promising spots and in the fields already proved. With the facts thus deduced they announced that we might expect the exhaustion of our supplies along in 1929-30, providing the rate of consumption and increase in consumption held up.

Wildcatters to Rescue

Well, those rates held up. They went further. They jumped and whooped. The curve on graph paper looks like the path of a skyrocket. Oh, but things looked bad! Then some wild Indian of a wildcatter went out and brought in a gusher on land the geologists had passed up and stamped as worthless from the oil producing point of view. A walloping big field with the typical oil rush leaped into being much to the consternation of the grave scientists.

The facts of the matter are simply this: our luck has been holding. As fast as one field has shown signs of petering out some adventurous soul with more money than sense has hit on a new one. It has become funny. The optimists have become brazen and blase. They are free to state now that as fast as we use it up for the next half a dozen generations at least we will find more. They don't pay much attention—publicly—to the studied scientific predictions about exhaustion.

That is not the right attitude. It isn't sensible. The geologists may have been fooled once and they may be fooled again but they are not fools. They have the weight of evidence on their side and its going to stay there. We are using up our underground capital. We are not subsisting on the interest therefrom. It is going to be exhausted. The only thing which we do not know is when that exhaustion is going to take place.

Before we use it all up the price is going to rise. The old law of supply and demand may wear a set of Mid-Victorian whiskers but it will operate. No one can stop it. The demand is still increasing and we know of no reason why it should decrease. The supply doesn't keep step. Even a moron can write the answer to that problem. As the price goes up, however, and the price rise is as certain some fine day as sunrise can ever be, we are going to begin to step into the substitute game. The manufacturer will not continue to sell pure gasoline. He will sell motor fuel which will be a combination of gasoline, alcohol, benzol and whatnot. It will cost from 50 to 100 per cent more than the gas we get today, but it will be a better fuel for the engines we will then have and perhaps even a better fuel for the engines we will have left of the 1923 vintage.

Alcohol and Shale

Some good men will tell you that an entirely new type of motor would be required to utilize the substitutes which we now know about but plainly they are wrong. They are wrong because many a forward-looking engineer has tried them and found them a lot better than the gasoline of today. Alone, they have disadvantages. Benzol freezes solid in winter weather. Alcohol is hard to start. We will never get enough benzol to supply us anyway, even if all the coal in the United States is coked and the by-products saved. Alcohol costs a great deal to produce.

But let's take what we've got in order and see why all the objections you can think of are fatuous when you see the problem as a whole instead of in these minute parts.

There are two promising substitutes for gasoline from underground, both of which are inexhaustible. These are alcohol and shale oil. Alcohol cannot be produced cheaply in the temperature zone. You can see that in a moment if you will stop to realize what the production of alcohol really is. You are changing the heat energy of the sun into liquid fuel. Your intermediate form of this energy is a growing plant. Plants grow fast only where the sun is hot and where there is the most sun. That is in the tropics. So to produce cheaply we need to grow the plants for making alcohol in the tropics. The distilleries should be there to reduce the cost of transportation.

The world-expert on this subject is Dr. F. W. Ormandy, the English physical chemist. He has studied the production possibilities of alcohol and found that if you will plant any one of several varieties of vegetation in South Africa on an area equal to the County of Kent England, you can make enough alcohol to supply Great Britain with motor fuel! The cost is not prohibitive. No one knows just what it would be but we do known that in the tropics labor is not very expensive and probably never will be. The sun and the soil toether do most of the work. The only problem that worries some people is the shipment of the fuel, but if we can afford to ship heavy fuel oil up from Mexico in tankers we can certainly face the shipment of refined motor fuel from the tropics even if it has to come all the way from the Philippines.

Engines would have to be changed a good deal to use alcohol straight but in our lifetimes there will always be other stuff to mix with it to make it easier to handle and by the time we pass out of this earthly picture the engineers ought to have fixed it up. The worry about carbon will pass with the use of alcohol—it burns clean as a whistle, although of course the lubricating oil will always make some of the messy stuff to annoy us.

A Costly Process

Shale deposits in the United States are so great that we can't think ahead to their possible exhaustion. From this soft, crumbly rock an oil almost exactly like some of our underround crudes can be passed and cooked out. We don't do it very well yet because we have not had enough bright engineers working on the task. There has been no reason yet to put them to work on it. This much can most certainly be said for oil from shale: It will lubricate the engines of our sons with all probability. It will enable the machine age to go on undettered by greaselessness of the wheels. As to gasoline from shale it is going to cost like hootch in these prohibition days.

Getting out shale rock is a mining operation preceding the oil production. We get our oil today by poking a hole in the ground and letting the stuff shoot into the tanks. At most we have to pump it out. Shale must be dug with steam shovels and processed before you begin to get your crude. To produce the fuel and lubricants we need for running our motorized world from shale would require a gigantic industry very much like that of mining soft coal. That takes a lot of man power. Can we afford to put such man power to such use? No one knows, though the economists would doubt it wholeheartedly. It may well be that we can afford to use only enough of it to help make a hynthetic fuel which we would like better than straight alcohol.

Even that possibility is a requirement of the far-distant future. It would certainly seen that for the next 50 or 100 years we would be getting enough underground crude to dope up the fuel of the future, because as we pointed out before we will use less of it as the supply will last longer than it otherwise would. Moreover it may be that we will learn to burn more of each barrel of crude from either source than we now do, right in the same sort of an engine as we are now using.

That idea opens up another field. Down in Washington the other day I was discussing the fuel problem with scientists from the Bureau of Standards. You know, of course, about the engine experiments which they have been running to test the fuel of today. They have the cooperation of the car manufactures and the oil producers. They have made an elaborate series of runs on cars which are literally covered with instruments to see how they perform with different grades of gasoline.

Government Tests

The tests are not yet completed but they made one preliminary report which is more than encouraging. They used a gas like that we get before the war, one which is the average of the gas sold over the country today and a third and fourth which are much heavier—we would say poorer. The test cars were two and three year old models of makes which in total volume make up by far the largest percentage of the cars now running on the roads.

The report of summer running showed that the American car of today can drink the poorest fuel they tried. It gives practically as good service as the snappy stuff they insist on for aviation. Its mileage was in many cases better, which might have been expected because there are more heat units in the heavy stuff than in the light. The test for winter use is a much more severe one and the engineers freely predicted that the poorer fuels would show up badly. No report has as yet been made but between us I have a mighty good reason for holding high hope that the winter tests will be pretty sweet, too.

Now the reason this test is mentioned here is a simple and direct one—If we adopted that heavier fuel it would be the same in effect as though we had increased the amount of gasoline under

(Continued on Page 94)

HIGHER COSTS OF MOTOR FUEL CERTAIN

We mined half a billion barrels of oil in 1922 and used up 600,000,000.

Importing the stuff is going to cost us a lot of extra pocket money.

Our luck has been holding. As fast as one field has shown signs of petering out some adventurous soul with more money than sense has hit on a new one. The optimists have become brazen and blase. This is not the right attitude. We are using up our underground capital.

Before we use it all up the price is going to rise.

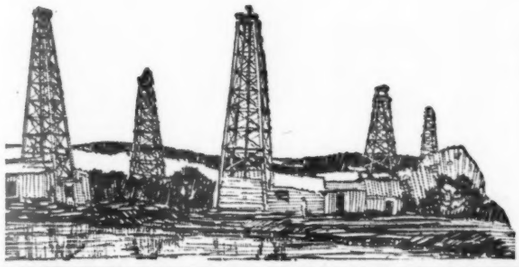
Engines would have to be changed a good deal to use alcohol straight.

There are two promising substitutes for gasoline both inexhaustible, alcohol and shale oil.

To produce the fuel and lubricants we need from shale oil would require a gigantic industry very much like mining soft coal.

For the next 50 or 100 years we will be getting enough crude to dope up the fuel of the future. We will learn to burn more of each barrel of crude; a deeper cut would mean fewer barrels, a step we have taken before, time and again. But we are getting about as deep into the barrel as we are likely to get with the present type of engine. Nor is there a substitute for gasoline available at any price around 30 cents a gallon or less, so we can confidently expect a rise in fuel cost.

As the price of fuel rises the engineers are going to produce engines so economical they will keep pace with the rise. They know pretty well the general principles and major improvements to come in the car of the future, and how it will be able to do 50 or 60 miles on the gallon. Experimentally they have done nearly that well in practical road tests.



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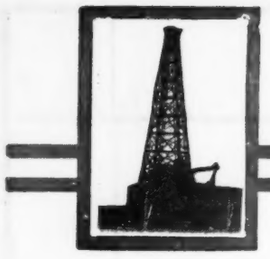

Oklahoma Field Operations

By C. D. Lockwood

Production of Burbank shows decline of 3,421 bbls. daily. Tonkawa output off 2,436 bbls. daily. Wewoka Field extended two locations north by completion of well which started at 120 bbls. an hour. Greater interest being shown in this field as result of recent completions.

Continuation of the general slump in field activities throughout Oklahoma and the extension of the new Wewoka Field to the north was the outstanding news of the week.

During the week ended November 3 there were 67 locations, 213 rigs, 505 wells drilling and 534 wells shut down, making a total of 1,319 operations in Oklahoma. The record for the previous week, ended October 27, was 63 locations, 214 rigs, 505 wells drilling and 535 wells shut down, showing by comparison a gain of four locations this week with the other figures remaining practically the same.

The Burbank Field showed the largest decline in production for the week ended November 7, the decrease amounting to 3,431 bbls. in spite of an increase of one well. The Tonkawa Field slumped 2,436 bbls. in the same period with seven completions, and Wewoka showed a gain of only 743 bbls. with two new wells.

With the completion of the Independent Oil Co. and the Sinclair Oil & Gas Co.'s No. 1, SE cor. Section 29-8-8, which was making 120 bbls. an hour nine feet in the sand topped at 3,110 feet, the Wewoka Field was extended two locations to the north and is now undefined in that direction. This well is about one-eighth of a mile north of the Dixie Oil Co.'s No. 2 Foster, CEL NE NE, Section 32-8-8, which came in last week for 960 bbls. daily from sand at 3,101-07 feet. The other wells have contributed to the keen interest which is being shown now in this pool and add to the evidence that it is going to become a real field.

The Dixie Oil Co.'s No. 2 B. Foster, NE NW SW NW, Section 33-8-8, one location east of the discovery well, made 873 bbls. the first 24 hours from sand at 3,115-19 feet. The Independent Oil Co. and the Sinclair Oil & Gas Co.'s No. 1 B. Foster, NW cor. NE SW NW, same section, made 180 bbls. an hour for the first 24 hours and settled to 40 bbls an hour from sand found at the same depth. Lewis & Clarke's No. 1 Long, SW cor. NE SW, Section 32-8-8, which made 50 bbls. an hour the first 24 hours from sand topped at 3,230 feet, was flowing 526 bbls. from three different sands.

Completions in Burbank

The rumors of an abrogation of the Burbank shutdown agreement were started by the bringing in of the Phillips Petroleum Co.'s No. 5, NW cor. NE, Section 9-27-5, which made 60 bbls. an hour from sand at 2,939-53 feet, and the same company's No. 6, NE cor. NW, same section, which was estimated at 70 bbls. an hour from sand at 2,925-45 feet. The Comar Oil Co.'s No. 1 Mehojah, SE cor. SW, Section 4-27-5, offsetting the Phillips Petroleum Co.'s No. 6 Club, was a disappointment as it had 2,000 feet of oil in the hole and was estimated to be a 75-bbl. pumper, getting the first oil at 2,948 feet. The Gypsy Oil Co.'s No. 4 Sands, SW cor. SE, Section 4-27-5, the other offset, was flowing 20 bbls. an hour from sand at 2,910-23 feet. The Phillips Co. made locations for No. 7 Club, SE cor. NE NW, and for No. 8 Club, NW cor. SW NE, Section 9-27-5.

In Creek County, the Cortez Oil Co.'s No. 2 Wilson, NE cor. SE NW, Section 22-16-8, was making 75 bbls. an hour, and No. 3 Wilson SE cor. NE NW, was making 3,000 bbls. a day from sand at 3,174-76 feet.

The Comar Oil Co. and the Gypsy Oil Co.'s No. 1 Garrett, CNE NW SE, Section 31-27-2e, which made a flow of 70 bbls. from sand at 2,237-46 feet, has 1,500 feet of fluid in the hole and is being cleaned out.

The daily average production of the Burbank Field for the week ending November 7 was as follows:

Company—	Wells	Bbls.
Carter Oil Co.	165	8,815
Comar Oil Co.	7	246
Cosden Oil & Gas Co.	68	1,992
Devonian Oil Co.	16	363
Gardner Pet. Co.	20	1,121
Gypsy Oil Co.	165	13,721
Kewanee Oil & Gas Co.	12	199
Laurel Oil & Gas Co.	16	528
Lorraine Pet. Co.	15	445
Midland Oil Co.	5	142
Mid-Kansas Oil & Gas Co.	20	3,870
Peters & Oliphant	1	238
Phillips Pet. Co. and Delmar Oil	2	3,032
Phillips Pet. Co.	12	1,805
Phillips Pet. Co. and Skelly Oil	141	7,771
Prairie Oil & Gas Co.	90	2,378
Producers & Refiners Corp.	28	844
Roxana Pet. Corp.	57	1,176
Simons, Moore and others	29	1,176
Sinclair Oil & Gas Co.	131	5,917
Skelly Oil Co.	4	1,570
Tidal-Osage Oil Co.	41	1,037
Twin State Oil Co.	8	366
Total	1,053	58,133
Kay County—		
George S. Bole	1	849
Carter Oil Co.	2	2,946
Comar Oil Co.	6	3,335
Cosden Oil & Gas Co.	1	3,170
Gypsy Oil Co.	5	1,070
Laurel Oil & Gas Co.	1	22
Phillips Pet. Co.	6	5,487
Mid-Kansas Oil & Gas Co.	4	2,954
Pure Oil Co.	2	579
Roxana Pet. Corp.	1	751
Dye-Tomlinson and others	5	923
Skelly Oil Co. and Phillips Pet. Co.	12	1,673
Sinclair Oil & Gas Co.	1	119
The Texas Co.	1	1,240
Twin State Oil Co.	5	2,057
Total	56	27,176
Total Burbank	1,109	85,308
Total last week	1,108	88,739
Difference	1	3,431

Daily average pipe line runs from the field were as follows:

Gulf Pipe Line Co., 4,136 bbls.; Cosden Pipe Line Co., 4,200 bbls.; Kay County Gas Co., 8,997 bbls.; Osage Pipe Line Co., 1,426 bbls.; Oklahoma Pipe Line Co., 14,351 bbls.; Prairie Pipe Line Co., 5,725 bbls.; Sinclair Pipe Line Co., 2,987 bbls.; Moore Refining Co., 2,307 bbls.; Empire Pipe Line Co., 1,072 bbls.; Magnolia Petroleum Co., 1,034 bbls.; Ozark Pipe Line Co., 4,461 bbls. Total, 50,696 bbls.

The daily average runs of oil to storage during the week were as follows: Standish Pipe Line Co., 9,224 bbls.; Gypsy Oil Co., 11,520 bbls.; Mid-Kansas Oil & Gas Co., 4,682 bbls.; Sinclair Oil & Gas Co., 4,081 bbls.; Dye-Tomlinson and others, 623 bbls.; Twin State Oil Co., 913 bbls.; Cosden Oil & Gas Co., 3,170 bbls.; George S. Bole, 399 bbls. Total, 34,612 bbls.

Wewoka Production

Following is the production of the Wewoka Field by companies for the week ended November 7:

Company—	Wells	Bbls.
Independent O. & G. Co. and Atlantic O. P. Co., Long	1	148
Independent O. & G. Co. and Sapulpa Ref., Long	1	209
Lewis & Clark, Long	1	276
Magnolia Pet. Corp., Parker	1	142
Producers & Refiners Corp.	4	6,221
Dixie Oil Co.	6	8,559
Total	14	15,555
Total previous week	12	14,812
Difference	2	743

Tonkawa Production

The Tonkawa production by companies for the week ended November 7, was as follows:

Company—	Wells	Bbls.
Amerada Pet. Corp.	35	3,310
Blackwell Oil & Gas Co.	28	2,095
Carter Oil Co.	6	371
Champlin Ref. Co.	3	118
Comar Oil Co.	260	15,840
Cosden Oil & Gas Co. and Marland Ref. Co.	13	619
Gypsy Oil Co.	78	8,617
Healdton Oil & Gas Co.	16	1,693
McCaskey & Wentz	42	5,543
McMan Oil Co.	2	54
Pennok Oil Co.	25	1,841
Phillips Pet. Co.	4	721
Prairie Oil & Gas Co.	11	951
Slick-Comar Oil Co.	31	2,781
Southwestern Pet. Co.	14	916
The Texas Co.	4	55
White Eagle Oil & Ref. Co.	6	672
Total	578	46,097
Total last week	571	48,533
Difference	7	2,436

Daily average pipe line runs from the field for the week were as follows: Kay County Gas Co., 33,089 bbls.; Ozark Pipe Line Co., 6,013 bbls.; Gulf Pipe Line Co., 1,490 bbls.; Empire Pipe Line Co., 1,534 bbls.; Champlin Refining Co., 1,639 bbls.; Prairie Pipe Line Co., 951 bbls.; Producers & Refiners Corp., 140 bbls.; Oklahoma Pipe Line Co., 371 bbls.; Bolene Refining Co., 527 bbls.; Golden Rule Refining Co., 200 bbls. Total, 45,954 bbls.

Creek County

In Creek County, the Galvez Oil Co.'s No. 2 Big Mosquito, NW cor. NE, Section 30-17-9, was a rig. W. L. Clark and others had a rig on the ground for No. 1 Damet, NW cor. SW, Section 3-16-9.

The Independent Oil Co.'s No. 1 Tiger, NE cor. SW, Section 36-15-7, was a rig. The Roland Oil Co.'s No. 2 Harem, NE cor. SE SW, Section 2-15-8, an old well, was dry and abandoned at 3,145 feet. The Texas Co.'s No. 2 Bartlett, NE cor. SE, Section 27-14-8, was making 35 bbls. after an 80-quart shot in sand at 2,470-2,517 feet. The same company's No. 5 Jacobs, SE cor. NE, same section, was making 20 bbls. after a 40-quart shot in sand at 2,495-2,528 feet.

W. L. Clark's No. 3, SE cor. Section 36-17-8, was making 75 bbls. from sand at 2,742-69 feet. F. A. Chapman's No. 2 Beaver, C SW SW SW, Section, 9-15-8, made 325 bbls. in 24 hours from sand at 3,270-85 feet. The Cortez Oil Co.'s No. 3 Wilson, SE cor. NE NW, Section 22-16-8, was making 100 bbls. an hour from sand at 3,164 feet. The same company's No. 2 Wilson, NE cor. SE NW, same section, swabbed 200 bbls. the first 24 hours, and was making 20 to 25 bbls. an hour from sand at 3,174-76 feet. The Damon Producing Co.'s No. 1 Gooden, SE NE, Section 14-15-8, was drilling again after being shut down at 3,270 feet.

In Okfuskee County, the Independent Oil & Gas Co.'s No. 1 Sumner, C NW SE, Section 3-13-7, was dry and abandoned at 3,621 feet. The Cromwell and others' No. 1 Bruner, NW cor. NE SW, Section 15-10-8, was flowing 300 bbls. by heads from sand at 3,480-84 feet and was shut down. The Holmes and Jarvis' No. 1 Harjo, C NE NE SE, Section 21-10-8, good for a 50-bbl. pumper, was shut down at a total depth of 3,498 feet. The Anglo Tex Oil Co.'s No. 1, SE cor. NE NE, Section 4-11-11, was dry and abandoned at 3,015 feet. Waite Phillips Oil Co.'s No. 5 Jefferson, C3L NW SE, Section 13-11-11, an old well, was dry and abandoned at 2,784 feet. The Sinclair Oil & Gas Co.'s No. 2 Smith, SW cor. NE NW, Section 13-11-11, an old well was dry and abandoned at 2,498 feet. The same company had rigging up to drill No. 3 Smith, C3L SW NE NW, Section 13-11-11, deeper at 2,453 feet.

Dry and Abandoned

The Independent Oil & Gas Co.'s No. 1 Foster, NE cor. SE, Section 12-10-9, was dry and abandoned at 3,485 feet. The Prairie Oil & Gas Co. and Kingwood Oil Co.'s No. 1 Harjo, NW cor. SW, Section 26-10-11, was dry and abandoned at 3,894 feet. The Howarth Oil Co.'s No. 1 Johnson, CNL NW NE NE, Section 17-12-8, was dry and abandoned at 3,935 feet.

T. T. Blakely's No. 1 Brock, NE cor. SW, Section 36-12-10, was making 40 bbls. from sand at 2,873-84 feet.

In Hughes County, the Kingwood Oil Co. had a rig on the ground and a cellar dug for No. 1, SW cor. Section 3-9-9. The Magnolia Petroleum Co.'s No. 1 Byrd, SW cor. SE SE, Section 4-9-11, after making 50 bbls. from sand at 2,957-63 feet, was not helped by a shot of 10 quarts and was plugged back to 2,963 feet.

In Okmulgee County, the Waite Phillips Oil Co. had a rig on the ground for No. 2 Richards, SE cor. SW SW, Section 14-15-11. Frank King's No. 3 Mitchell, CWL NW NW NW, Section 6-12-12, was making 130 bbls. after 15 and 20-quart shots in sand at 2,435-2,535 feet. E. T. Black's No. 1 Hawkins, SE cor. NE SE, Section 5-11-12, was making 2,500,000 feet of gas from sand at 2,578-80 feet. The Waite Phillips Oil Co.'s No. 1 Perryman, NE cor. NW SW, Section 33-12-13, was dry and abandoned at 3,100 feet.

In Carter County, the Patsy Oil Co.'s No. 6 Hicks Palmer, CEL SE NE NE, Section 6-3s-2w, had a hole full of oil with the bit 60 feet in sand topped at 2,810 feet. The Roxana Petroleum Corp. had rigging up to drill deeper on No. 3 Cook, NE cor. SW, Section 30-1n-8w. The Priddy-Ellis Drilling Co. was drilling at 1,650 feet on No. 1 Denton, CEL SE SW, Section 23-1n-9w.

In Stephens County, the J. C. Cooke Oil Co.'s No. 1 McPhail, SE cor. NE SE, Section 35-1s-7w, was dry and abandoned at 3,115 feet.

In Pawnee County, the Magnolia Petroleum Co. was spudding No. 1 Rimmer, NW cor. NE SW, Section 16-20-6. Dempsey and others had a rig on the ground for No. 1 Lesber. J. B. Grieves' No. 1 Anglin, NW cor. Section 31-21-8, was making 30 bbls. naturally from sand at 2,600-01 feet. Mason & Lyons' No. 2 Miller, SW cor. NE SE, Section 4-20-7, was making 15 bbls. naturally from sand at 2,123-37 feet. Steen and others' No. 1 Canfield, NW cor. NE SE, Section 17-20-7, was making 45 bbls. after being treated to 15-, 10- and 25-quart shots in sand at 2,649-87 feet.

In Payne County, the Home Gas Co.'s No. 4 Parker, CNW NE, Section 26-18-5, an old well, was making 12½ bbls. naturally from sand at 3,695-3,703 feet. The same company's No. 1 Hunter, C3L SE NE SW, Section 30 18-6 was drilling at 620 feet.

Two wildcat locations were abandoned. The Texas Oil Development Co. abandoned location for No. 1 Fields, SE cor. 33-13-21w, Roger Mills County. The Radio Oil Co. abandoned location on No. 1 Castle, NW cor. Section 29-11-7w, Canadian County.

Little Activity in Osage

Little activity was reported in the Osage County fields. In Section 23, 24, 25 and 35-27-5, 47 wells were shut down.

(Continued on Page 111)

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"...The Company drilling this hole were in the habit of taking some core samples from the well whenever deemed necessary and at this particular time were down something like 2,750 feet and had cut the core, but failed to bring it out with their core cutting bit. They then took a six-foot piece of rotary drill pipe, put it on the bottom of the string, lowered it to the bottom of the hole with instructions to the driller to let the weight of the drill pipe down on the bottom very lightly. In this manner they went down over the core and in rotating on the bottom hoped to bell in the six-foot piece of rotary pipe enough to pinch in the bottom of the pipe and thereby grip the core enough to bring it out.

This was done, but the driller put on too much weight, rotated too long and the result was that the pipe not only telescoped a little bit but completely stockined itself so that the 6" rotary pipe was reduced to approximately 4" as noted and was driven back and up inside, as the sample shows, for a distance of approximately two feet. The sample when we cut it apart had the original drill core in it but the cutting apart of the sample piece destroyed the core.

As noted, this 6" piece of drill pipe shows absolutely no splits or cracks and it was such an unusual occurrence that we felt sure it would be an interesting exhibit..."

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North-Central Texas Field

By Dan F. Dugan

Eastland Drilling Co.'s No. 4 Shipley, Currie Pool, now making 2,000 bbls. Maer and others' No. 6 Carter, Archer, near completion at 250 bbls. John O'Neil's No. 1 Saunders, near Clara Pool, swabs 125 and J. J. Perkins' No. 1 Saunders shows 150 initial. Rains stop operations in many fields.

FORT WORTH, Tex., Nov. 12.—Daily production runs for the North Central Texas Field during the past week amounted to 112,365 as against 112,355 bbls. for the previous week, an increase of 10 bbls. daily. Compared with the previous week's report, there were some decided changes. Burkburnett made a loss of 1,065 bbls. and Iowa Park also decreased its previous week's showing with a reported loss of 1,500 bbls. Eastland County gained 555 bbls. and the wildcat pools made a jump of 1,915 bbls. This increase was principally from the Desdemona Field and from Young County. Archer County, with only a small number of completions reported, and the majority of them showing for a small amount of initial production, accounts for the decided loss in the Iowa Park runs, which is credited with the runs from Archer County.

The Texas Carbon industries have started the erection of their carbon black plant, 2 miles north of Breckenridge, in Stephens County. When the plant is completed and the machinery installed around $150,000 will have been invested. It will have a capacity of burning 5,000,000 feet of gas daily. A straight brand of carbon black will be shipped in carload lots to Akron, Ohio, as the greater part of the carbon black manufactured in this county is used in the manufacture of automobile tires.

The Eastland Drilling Co.'s No. 4 Shipley, in the Curry Pool, 8 miles southwest of Breckenridge, is reported a completion this week for 2,000 bbls. at 3,155 feet. With the drilling of the cap rock nearly two weeks ago the well flowed the first 24 hours around 10,000 bbls., the second day water trouble developed and the oil flow decreased; the water flow has been overcome and the well is now producing around 2,000 bbls. of oil daily, with but little water showing.

The Texas Co.'s No. 19 Black Bros., drilled to 4,135 feet, has proved a disappointment and will be abandoned.

Eastland County

Continued rains have made roads that are not hard surfaced a sea of mud, and oil field work is practically at a standstill. From an oil production standpoint there has been a tremendous change from the boom days of four years ago, when men toiled through mud and slush, built derricks in the rain and endured hardships of all kinds in order to keep things moving. Then the oil fever was at its highest, while now there isn't any enthusiasm in drilling nor any particular rush to bring in new wells.

The only semi-completion of importance in the county during the week is that of the Gordon Petroleum Co.'s No. 1 Ray, 7 miles northwest of Eastland. It is flowing by heads below 3,400 feet and has a good gas pressure. This sand was picked up unexpectedly, there being another sand on the tract at 3,500 feet, in which the Gulf Production Co. got a good producer some three years ago. The Gordon Petroleum Co. will drill it down to the deeper pay, but if this is not productive the well will be plugged at the 3,400-foot level and shot.

Two tests were spudded this past week to the southwest of the Pioneer Pool and in the immediate vicinity of Moore and others' No. 2 Ackers, the discovery producer of that territory. Development operations close to the Moore well are: Moore and others' No. 1 Faulkner, the first well to start drilling following the discovery, is drilling at 1,500 feet, while the Pennant Oil & Gas Co.'s No. 1 Albin, to the southeast of the discovery, is slightly below the 1,000-foot level. Of the two wells spudded this week, that of T. B. Slick on the Faulkner is located only a few hundred feet northwest of the discovery well and the Schaffner Bros., No. 1 James is southwest of all previous developments and close to a half mile from the discovery well.

Considerable interest centers in the semi-wildcat of F. W. Stone & Co.'s No. 1 Barr, near the city limits of Cross Plains. It is drilling around 600 feet. Considerable acreage has been changing hands in the territory affected. This activity lies about a mile and a half to the west of the Moore and others' No. 2 Ackers.

Wichita-Electra

In the South Electra Field very little development is going on. The Magnolia and Texhoma companies are drilling on some of their tests on the Waggoner leases, the latter company having set casing on the oil sand in No. 1 J. Waggoner at 1,726 feet.

Wildcat tests in this territory are shut down, it being impossible to reach the locations until the roads dry and become passable.

A possible extension of the new shallow pool south of Fowlkes Station may be made by the Birdwell and others' No 1 Edgerly, south of the Texhoma's wells on the Burnett lease, which was encountered at 1,425 feet, showing 32 bbls daily. The Texhoma's 2-A Burnett is drilling at 1,000 feet. The Perkins-Cullum well to the west passed through a water sand at 1,549 and is shut down for fuel at 1,745 feet.

Considerable new drilling is expected as soon as the roads will permit travel. Except for a brief period last week, the district has been deep in mud for three weeks. All streams and tanks are full to overflowing and the danger of water shortage, which has halted operations several times this year, now seems very remote.

The only other section of the county to show any activity is on the Saunders tract near the old Clara Pool. The John O'Neil No. 2 Saunders, which was a semi-completion early in the week, is swabbing around 125 bbls. daily and will be placed on the pump. To the south, 300 feet from the No. 1 Saunders discovery well, the McDabb Oil Co. is drilling below 1,000 feet on its third test.

South of the O'Neil wells the J. J. Perkins No. 1 Saunders is showing initial 150 bbls. at 1,840 feet.

Archer County

A decided activity which has been under way in all sections of the county for the past several months received a setback the past week on account of the high waters in the producing areas, the rains of the past 10 days making it impossible to reach locations with materials.

The Humble Oil & Refining Co.'s No. 1 Netherton, which came in last week making 60 bbls. from the 1,580-foot sand, was placed on the pump and is good for 50 bbls. daily. This is the only producing completions reported from the county for the week.

The Jetter and others' No. 1 Wilson, in the northeast quarter of Section 1, which came in a week ago, extending the pay nearly three-quarters of a mile to the south of the Wilmot producers, is preparing to complete; it is standing with 1,200 feet of oil in the hole at 1,500 feet. To the west of this well D. O. Johnson has a derrick up and will offset as soon as the material can be hauled out to the location. On the north the R. M. F. Co. will drill an offset on its Wilson lease.

The White Oil Corp.'s No. 11 Kemp-Kempner is a derrick in the Freeman-Hampton Pool, and a location on the 25 acres out of the Luke Wilson land, about 1,400 feet northwest of the Barkley Meadows producer, has been made.

The Parrish Farm Oil Co. is setting casing on a good-looking sand in the wildcat test in block 152, Geraldine townsite. The well, which is a semi-wildcat, is 1,300 feet southeast of The Texas Co.'s producers on the Carter Brothers tract and a like distance to the east of the old Artex Co.'s well in block 93, Carter lands. The top of the pay was picked up at 1,270 feet and was drilled a short distance, showing considerable oil. The completion of a well at this point will be the means of adding some territory for future drilling operations.

The Maer and others' No. 6 Carter is a near completion at 1,570 feet; a late field report credits it with showing 250 bbls. and drilling.

Wichita-Wilbarger

Completions reported in Wichita and Wilbarger Counties are: Hobbs Bros.' No. 17 Yarborough, in Wilbarger County, 21 bbls. at 1,515 feet; Bridwell and others' No. 1 Edgerly, 32 bbls. at 1,430 feet.

Drilling—The Texas Co.'s No. 285 Waggoner, drilling in lime at 1,640 feet; Brewer and others' No. 1 Douglas, shut down at 1,100 feet, but will be drilled to the 1,900-foot level; Kruger and others' No. 7 Waggoner, drilling at 305 feet; Rowe Drilling Co.'s No. 1 Waggoner, drilling in brown shale at 925 feet; Empire Gas & Fuel Co.'s No. 25 Burnett, shut down on top of a sand at 1,628 feet; Fisher and others' No. 3-B Fisher, coring a sand at 1,440 feet; Herford Oil Co.'s No. 11 Allingham, drilling in shale at 1,170 feet; Noel and others' No. 1 Waggoner, shut down for 5⅞-inch casing with tools in the hole at 1,950 feet; Simms Oil Co.'s No. 13 Burnett, drilling at 1,445 feet; Texhoma Oil & Refining Co.'s No. 10-F Waggoner, at 1,680 feet; No. 11-F Waggoner, at 1,440 feet; No. 27-A Waggoner, at 1,140 feet; Taylor and others' No. 3 Yarborough, shut down for a rotary at 525 feet; Duncan and others' No. 2 Rhodes, shut down on top of an oil sand at 1,260 feet; Stedham and others' No. 2 Daume, standardizing on top of an oil sand at 1,825 feet.

Wilbarger County

Drilling—Robinson and others' No. 1 McCaleb are rerunning 6⅝-inch casing at 1,940 feet; South Vernon Oil Co.'s No. 1 Stephens, underreaming 8¼-inch casing at 1,550 feet.

Drilling—Gulf Production Co.'s No. 13 Dale is fishing for a bit at 1,505 feet; Langford and others' No. 7 Langford, fishing for tubing at 1,850 feet; No. 8 Langford, drilling at 1,625 feet; Morgan and others' No. 1 Chapman, drilling in brown shale at 1,100 feet; McDabb Oil Co.'s No. 2 Potter, drilling up two joints of casing at 1,863 feet; No. 2 Saunders is swedging casing on top of an oil sand at 1,830 feet; John O'Neil's No. 3 Saunders, drilling in shale at 1,505 feet; No. 4 Saunders, drilling at 1,300 feet; Perkins and others' No. 2 Saunders, at 1,230 feet; Pigg Oil Co.'s No. 17 Hirschi, drilling in brown shale at 1,405 feet; Sun Oil Co.'s No. 23 Hirschi, shut down on top of an oil sand at 1,850 feet; No. 24 Hirschi, shut down for fuel oil at 680 feet.

Archer County

Completions—Humble Oil & Refining Co.'s No. 1 Netherton, 50 bbls. at 1,580 feet; McGee Bros.'s No. 1 Richardson, dry at 1,390 feet.

Drilling—Barkley and Meadows' No. 1 Wilson, testing an old sand at 1,545 feet; Barnes and others' No. 1 Wilson, testing on the beam an oil sand at 1,610 feet; Bell and others' No. 3 Wilson, drilling at 665 feet; Bohler and others' No. 1 Wilmot, rigging to pump and test a sand at 1,600 feet; No. 2 Wilmot, drilling in blue shale at 1,325 feet; Roy and others' No. 1 Carter, drilling at 865 feet; Chenault and others' No. 4-C Wilson, drilling in rock at 1,405 feet; Clayton and others' No. 2 Richardson, drilling in blue shale at 1,100 feet; Collender and others' No. 1 Hawkins, drilling at 1,495 feet; Empire Gas & Fuel Co.'s No. 1 Wilson, rigging to pump and test an oil sand at 1,618 feet; Featherstone and others' No. 3-B Wilson, drilling at 1,265 feet; No. 1-C Wilson, bailing and testing an oil sand at 1,590 feet; Granberry Drilling Co.'s No. 1 Wilson, showing water and oil from a sand at 1,600 feet; Gwynn and others' No. 4 Carter, drilling at 1,325 feet; Lane and others' No. 1 Couch, shut down for orders on top of an old sand at 1,395 feet; Lynch and others' No. 1 Birdwell, shut down for casing at 1,335 feet; Maer and others' No. 1 Parrish, drilling at 1,205 feet; Morris and others' No. 1 Wilson, drilling at 665 feet; Norton and others' No. 1 O'Donnell, shut down on account of high water on top of an oil sand at 1,275 feet; Oil Investment Co.'s No. 2-B Parrish, drilling at 1,385 feet; Petroleum Production Co.'s No. 5-C Wilson, coring in shale at 1,595 feet; Sibley and others' No. 5 Wilmot, drilling at 485 feet; No. 6 Wilmot, at 225 feet; Sixty Six Oil Co.'s No. 3 Wilson, drilling without any showing at 1,565 feet; Smith and others' No. 1 Wilson, shut in on top of a sand showing oil at 1,392 feet; No. 2 Wilson, rigging to pump and test a sand at 1,595 feet; Staley and others' No. 3 Mrs. Carter, drilling in an oil sand at 1,575 feet; The Texas Co.'s No. 8 Carter Bros., drilling in a sandy shale at 1,465 feet; Sun Oil Co.'s No. 3 Farmer, underreaming 12½-inch casing at 630 feet; Sunshine State Oil & Refining Co.'s No. 8 Carter Bros. drilling at 1,500 feet; No. 10, Carter Bros., drilling at 1,495 feet; Swastika Oil Co.'s No. 9 Richardson, preparing to pump an oil sand at 1,365 feet; No. 1 Neil, shut down for cable tools at 3,950 feet; Verschoyle and others' No. 1 Wilson, shut in on top of an oil sand at 1,400 feet.

Young County

Drilling—Bullington and others' No. 1 Hawkins, sidereaming at 1,330 feet; Byrens and others' No. 1 Mahoney, preparing to run 5⅜-inch casing at 3,933 feet; Calmo Oil Co.'s No. 3 Moren, drilling in shale at 1,705 feet; Creighton and others' No. 1 Vernon, drilling a broken sand which is showing some oil at 1,100 feet; Gulf Production Co.'s No. 2 Hockaday, rigging up a rotary to drill deeper at 3,305 feet; Holcomb and others' No. 1 Bullock, have a fishing job at 1,105 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Gibson, sidereaming with 1,000 feet of oil in the hole from the top of a lime at 3,750 feet; No. 1 Moren, drilling in brown shale at 1,315 feet; Dudley Miller's No. 2 Hughes, drilling at 2,385 feet;

(Continued on Page 98)

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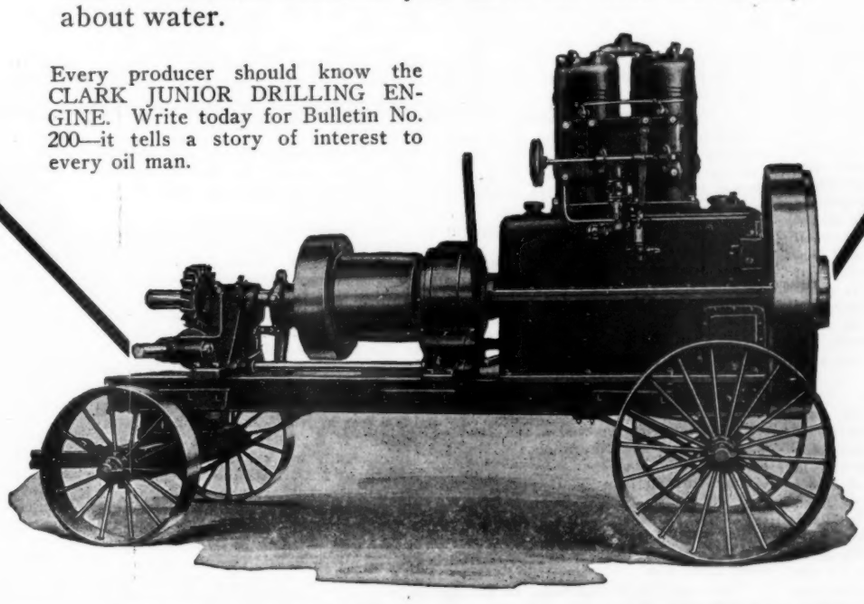

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North Louisiana-Arkansas

By M. L. Vaughn

Delukie and others' No. 2 Harrell, Union County, makes 600 bbls.; Anderson and others' No. 1 Berry pumps 150 bbls.; J. E. Crosbie's No. 4 Harrell, is flowing 250 bbls.; Sun Oil Co.'s No. 6 Hays, 300 bbls. Davidson & Palmer's No. 1 Frost Johnson believed to have struck a new producing area.

SHREVEPORT, La., Nov. 12.—Only three areas throughout the North Louisiana and South Arkansas district failed to show a loss in pipe line runs during the past week. These were Haynesville with a gain of 195 bbls.; El Dorado with 120 bbls., and light Smackover, with 1,695 bbls. The heaviest loser was heavy Smackover, with a loss of 2,860 bbls.; the total loss aggregating 5,220 bbls. with a net loss of 3,210 bbls. daily throughout the entire district. The distribution follows:

North Louisiana	
Caddo, light	8,650
Caddo, heavy	2,490
De Soto-Red River	5,495
Elm Grove	1,075
Haynesville	23,590
Homer	9,260
Bellevue	6,470
Total	57,030
South Arkansas	
El Dorado	10,780
Calion	6,515
Smackover, light	17,690
Smackover, heavy	83,925
Stephens	2,785
Total	121,695
Total for week	178,725
Total last week	181 935
Decrease	3,210

New Producing Area

The most important item is in connection with Davidson & Palmer's No. 1 Frost Johnson, Section 12-23-1e, in Union Parish, 15 miles due north of Farmerville, the parish seat, and about 2 miles from the Arkansas State line. The well stands with 1,500 feet of oil in the hole at a depth of 2,217 feet with 7 feet of broken sand and shows also considerable gas and, although salt water is present in the hole in the proportion of about one to three of oil, it is almost unquestionably established that a new oil producing area has been located and generally believed that further development cannot fail to secure production in quantity. It has not yet been determined whether or not this well may be made commercially valuable as a producer but that it has established a new oil area can hardly be questioned.

Pipe Line to Stephens

Tests being made November 10 were preparatory to opening up for service of the Atlantic Oil Production Co.'s pipe line to the Stephens area. The line is 6-inch, 25 miles in length and connects the Wepfer tank farm, near McNeil, Ark., with the Atlantic's Haynesville-Gilark line. As shown in The Oil and Gas Journal's crude prices page the Stephens oil has been handled exclusively by the Atlantic company so far as quotations were concerned, but Hude and Aarens, producers in this area, were running some of this production in their gathering line which has just been sold to the Louisiana Oil Refining Corp. The property included 11 miles of gathering line, a 10-car loading rack and 5,000 bbls. of steel storage. Since the property was acquired by the Louisiana Corp. it has added 20,000 bbls. of steel storage and it is reported has under consideration the construction of a pipe line to this field, which would indicate a competitior for the Atlantic compnay.

The Stephens line may be pressed to a capacity of 10,000 bbls. and is equipped with a single unit drect connected De laVergne oil engine to a 4½ by 24 National Transit pump and is reported to represent an investment of approximately $160,000. Up to the completion of this line the Stephens production had been handled almost exclusively by the Atlantic company which shipped to Texas Gulf ports for re-shipment to Philadelphia and it is not expected that the operation of a pipe line service for this area will have any appreciable effect upon the volume of its production.

Completion of the La-Tex Community Oil Co.'s French No. 1 has stimulated interest in that locality and it is currently reported that a number of offsets will be drilled to develop further the possibilities of that area. It is currently reported that "Bill" Rowe, of Homer fame, may interest himself with others. The well is 5 miles north of Vivian, in Section 34-23-16 and while showing considerable salt water with the oil is credited with a net production of about 30 bbls. daily.

Accurate location of the first well to be drilled by the Southern Arkansas Oil Co., which has an area in Lincoln, Cleveland, Dallas and Jefferson Counties, Arkansas, is in the southwest corner of the SW¼ of the SE¼ of Section 27-9-10 West. The well was spudded in November 1 and 15-inch surface casing will be set and probably has been before this is in print.

Smackover Completions

New production aggregating 1,335 bbls. resulted from completions in the Union County area of the Smackover district during the past week. Five producers were brought in and four holes abandoned either as dry or with insufficient production to warrant pumping. The best well was No. 2 Harrell, Section 17-16-15, completed by Deluki and others at 2,110 feet, swabbing 600 bbls.

Anderson and others completed No. 1 Berry, Section 8-16-15, pumping 150 bbls. from 2,095 feet.

J. E. Crosbie completed No. 4 Harrell, Section 17-16-15, at 2,090 feet, flowing 250 bbls. through 2½-inch tubing. This well was formerly reported as the Arkansas Pipe Line and Navgation Co. No. 1 Harrell.

The Pan-American Oil Co. brought in No. B-3 C. L. Saxon, Section 4-16-16, pumping 35 bbls. from 2,030 feet.

The Sun Oil Co. completed No. 6 Hays, Section 3-16-15, flowing 300 bbls. from 2,765 feet.

Three wells were abandoned as having insufficient production to warrant pumping as follows: Frank T. Pickwell No. 1 Crowder, Section 10-16-16, at 2,010 feet; Plateau Oil Co.'s No. 1 Tatum, at 2,010 feet and No. 3 Tatum, at 2,020 feet, both in Section 7-16-15. Winger and others abandoned No. 1 Ogden, Section 4-19-14, at 2,765 feet, it having tested dry.

Drilling Operations

Drilling operations in this area show a decided slump, no new operations being recorded. Two or three wells will be deepened after having been previously completed, but the total of active operations dropped to 117 as shown by the summary which is as follows: Waiting on standard rig, 27; temporarily abandoned, 16; drilling, 56; rigs, 6; derricks, 28, and locations, 3.

Barnsdale & Foster set 6⅝-inch at 2,050 feet in No. 2 J. Murphy and surface 12½-inch in No. 3 J. Murphy, Section 17-16-15. Berfet and others are fishing in No. 1 Snyder, Section 2-19-15, with the hole at 2,570 feet. Bondurant and others are drilling in rock at 625 feet in No. 1 Tuberville, Section 9-18-12.

Caldwell and others set 10-inch surface casing and have drilled to 1,150 feet in No. 1 Murphy, Section 17-16-15. The Constantin Oil & Refining Co. set surface 12½-inch in No. 3 Hinsop (formerly reported J. T. Hinson), Section 7-18-15. J. E. Crosby is arranging to drill through liner and clean No. 1 Harrell, Section 17-16-15, at 2,035 feet. This operation was formerly reported as Arkansas Pipe Line & Navigation Co. No. 1 Harrell.

The Federal Petroleum Co. is arranging to set 2½-inch at 2,080 feet in No. 2 Hicks, Section 20-16-15, with 1,300 feet of oil in hole and 23 feet of sand in Section 22-16-15 is rigging up No. 1 W. H. Murphy; in Section 28-17-12 is drilling at 2,850 feet in No. 2 Union Saw Mill.

The Dunn Oil Co. deepened No. 1 McKinney, Section 18-16-15, reported completed at 2,045 feet with 150 bbls. and is awaiting standard rig at 2,080 feet with 28 feet of sand.

In addition to other operations the Federal Petroleum Co. is also waiting on standard rig for No. W-5 Wells, Section 15-18-15, at 2,005 feet with 45 feet of sand.

Garrett and others are drilling in sandy shale at 1,450 feet in No. 1 Robinson, Section 23-18-14. The Gladys Belle Oil Co. has derrick pattern on No. 3 J. G. Murphy, Section 17-16-15.

Hall & Gann bailed casing dry and are arranging to drill in at 1,855 feet in No. 2 Graves, Section 3-16-15. Harrell and others are drilling at 500 feet in No. 1 Teele, Section 11-19-12. The Higgins Oil & Refining Co. set 6-inch at 1,900 feet in No. 2 Jameson, Section 21-16-15. Y. E. Hildreth will attempt to bridge again in No. 1 Smith, Section 2-16-17, at 2,290 feet, another effort having failed to hold. Hollyfield and others set liner and are arranging to swab at 2,000 feet in No. 4 Giller, Section 11-16-15, with 58 feet of sand and 1,600 feet of oil in hole. The Humble Oil & Refining Co. is fishing for swab at 2,015 feet in No. A-3 Giller, Section 15-16-15, with 1,000 feet of oil in hole. In Section 3-16-15 is plugging back to cut off salt water at 1,985 feet in No. 2 B. Goodwin, with 47 feet of sand. In Section 14-18-15 is drilling at 1,600 feet in No. 1 E. G. Murphy and at 1,200 feet in No. 2; and in Section 32-15-16 set 6⅝-inch at 1,870 feet in No. 2 Saxon. Hunt and others are arranging to deepen No. 1 Primm, Section 1-16-16, completed at 1,995 feet in December, 1922, and are milling out casing at 1,850 feet. The well was completed with 20,000,000 feet of gas from 64 feet of sand.

The Imperial Oil & Gas Co. has moved rig off No. 1 T. G. Murphy, Section 7-16-15, leaving derrick standing.

King & Timberlake are waiting on standard rig for No. 1 Hodges, Section 1-16-17, with 1,100 feet of oil in hole and 9 feet of sand.

Jones and others will not drill No. 3 Lawton, Section 10-16-15, which will be dropped from reports.

Livingston and others plugged back to 1,975 feet in No. 2 Roper, Section 3-16-15, and are waiting on standard rig with 22 feet of sand.

The Magnolia Petroleum Co. set surface 10-inch in No. 5 Moody, Section 8-17-14 and in the same section tested casing o. k. and is arranging to drill in at 1,960 feet. J. Marr set liner and is fishing for swab at 2,115 feet in No. 1 J. Murphy, Section 17-16-15, with 1,000 feet of oil and 25 feet of sand. The Marr Oil Corp. set liner at 2,170 in No. 2 Moody, Section 17-17-14, with 1,500 feet of oil in hole and 2½ feet of sand. The Murphy Trustees are waiting on 4½-inch to set at 2,310 feet in No. 2 Lawton, Section 7-16-15.

The National Gas & Petroleum Co. tested dry at 2,290 and 2,310 feet with 1,000 feet of salt water standing in the hole at 2,310 feet and will go deeper.

The Oil Operators Trust plugged back to 1,980 feet in No. 3 Graves, Section 3-16-15.

Page and others are drilling in rock at 1,400 feet in No. 1 Alphin, Section 23-16-15. The Pan-American Oil Co. tested dry with a show of oil and gas at 1,935 feet in No. A-4 Saxon, Section 4-16-16. The Penguin Oil Co. is drilling in gumbo at 1,615 feet in No. 2 Harrell, Section 17-16-15. The Pure Oil Co. is waiting on standard rig for No. 2 Craig, Section 15-16-15, at 2,015 feet with 500 feet of oil in hole and 42 feet of sand.

The Standard Oil Co. set 10-inch surface casing and has drilled to 1,250 feet in No. 10 Alphin, Section 11-16-15. In Section 5-16-16 is drilling at 1,635 feet in No. C-1 Saxon, having set surface 10-inch. Stark and others have shut down at 1,610 feet in No. 1 Little, Section 21-16-12 and have the work waiting orders. The Sun Oil Co. is waiting on standard rig for No. 5 Hays, Section 3-16-15, at 1,980 feet with 38 feet of sand.

Tarver and others are building derrick for No. 1 Childs, Section 8-16-16. The Texas Co. set surface 15½-inch and has drilled to 1,185 feet in No. 2 J. T. Murphy, Section 22-16-15. The Tidal Osage Oil Co. is rigging up No. 2 Vestal, Section 17-16-15.

Weatherbee and others are drilling at 1,195 feet in No. 10 O. A. Rice, Section 6-16-16. Woodley and others are waiting on standard rig at 2,205 feet in No. 1 Van Hook, Section 8-18-14, with 16 feet of sand.

Ouachita County Completions

Completions in the Ouachita County area of the Smackover Field netted very little new production during the week. Three wells were completed, one a failure. This was No. 1 Goodgame, Section 19-11-16, abandoned in rock at 2,275 feet by Hall and associates.

The Riggs Drilling Co. completed No. 1 Myar Estate, Section 32-15-16, at 2,275 feet, flowing 500 bbls. of fluid of which 95 per cent is salt water.

The Standard Oil Co. of Louisiana, completed No. 1 Griffin(Section 33-15-15, pumping 50 bbls. from 2,000 feet.

Drilling Operations

Summary of drilling operations in this area indicates a much stronger situation as to activity than is presented by Union County. A number of new operations are in evidence and work in progress is being pressed vigorously.

The Altoreer Trust set surface 10-inch and has drilled to 1,000 feet in No. 1 McElroy, Section 29-15-16, formerly reported as a Garrett and others operation. The Arkansas Natural Gas Co. is rigging up No. 2 Patton, Section 31-15-16; has derrick pattern on No. 3 Patton, Section 30-15-16, and has rig down on No. 4 Snyder, Section 34-15-15, leaving derrick up.

Bailey and others have derrick up for No. 1 Code, Section 19-15-16. Bashara and others set surface 10-inch and have

(Continued on Page 108)

PERFECTION VAPOR PRESSURE TANKS
WOOD, AND BOLTED STEEL TANKS

Indisputable Evidence—No. 1

H-Y OIL COMPANY, Inc.
405 Mrs. Dan Waggoner Building
Fort Worth, Texas

July 24, 1923.

Black, Siballs & Bryson,
Fort Worth, Texas.
Att: Mr. Grubbs.

My dear Sir:

We have been producing oil for a number of years, and your representatives have attempted many, many times to sell us your Vapor Pressure Perfection Tanks; but we were so thick-headed that they could not convince us of the real merit of your tanks.

In June we purchased one of your flow tanks and two stock tanks. We made well head tests of the gravity of our oil, and we are frank to state to you the test in our tanks was held well head tests and probably just a fraction better.

We have no evaporation in your tank, and the other regular tanks, we are having one inch in 24 hours on 250-barrel tanks; therefore, it is a great pleasure to us to say something in regard to the real merit of your tanks. We feel that a producer is making a great mistake in not installing Perfection Tanks.

We also believe that within twelve months' time; we will save enough in evaporation and on the gravity of our oil to more than pay for the tanks.

Yours very truly,
H-Y OIL COMPANY, Inc.,
J. R. Hill President.

JRH-F

"A producer is making a great mistake in not installing Perfection Tanks."

You too can avoid the ravages of evaporation by installation of Perfection Vapor Pressure Tanks.

For as the H-Y Oil Company points out, procrastination is a great mistake. It costs real money.

Think of the satisfaction in knowing your Perfection battery will pay for itself in a year's time at the most.

Get in touch today with our branch representative in your field.

Black Sivalls & Bryson
INC.
BARTLESVILLE ~ OKLAHOMA

Branch offices in all principal active fields

Gulf Coast Oil Operations

By P. L. McGreal

Humble Oil & Refining Co. completes well in Orange Pool, which flows 1,200 bbls. oil and same amount sediment and water. Production again shows increase. Building additional storage in Luling Field. Activity in development work in wildcat areas. Operations in southern Louisiana.

HOUSTON, Tex., Nov. 12.—The best completion of the week in the Coastal pools is the Humble Oil & Refining Co.'s No. 20-B Chesson at Orange, flowing 1,000 bbls. of oil and about the same of sediment and water at 4,200 feet. The Atlantic Oil Producing Co.'s No. 2 McLean, deepened to 4,200 feet, is showing oil in a sand and will be tested.

On the northwest side of the Hull Pool, the Link Oil Co.'s No. 4 Reviere bailed salt water at 2,735 feet. It will be drilled deeper. The test was a disappointment as it showed for a nice well and offset tests had been located.

Rich and associates have 30 feet of sand, showing a good saturation in No. 1 Ahlers, on the south side of the new Big Creek semi-pool in Fort Bend County, 7 miles south of Richmond. It is an old hole taken over from Horn & McLeod and deepened. The sand was found from 2,356 to 2,386 feet. Casing will be set and a test made.

Estimated Production

The estimated daily average gross production of the Gulf Coast pools and the new southwest districts for the week is placed at 96,155 bbls., against an estimate of 95,855 bbls. last week. The estimate for the coastal division alone is 89,305 bbls. compared with 88,975 bbls. last week. The Luling Field is estimated at 9,150 bbls. The estimate for each district is as follows:

District	Gross Bbls.
Batson	1,190
Blue Ridge	765
Barber Hill	350
Dayton	60
Damon Mound	1,950
Edgerly	410
Goose Creek	13,500
Humble	5 620
Hull	20,800
Jennings	720
Markham	105
Orange	15,105
Pierce Jct.	625
Spindletop	810
Saratoga	1,760
Sour Lake	5,185
Somerset & P. P.	3,100
Vinton	5,920
Welsh & Anse La Bute	80
West Columbia	14,350
Miscellaneous	3,750
Total	96,155

Luling Field

The Magnolia Petroleum Co. is building five 55,000-bbl. tanks in addition to the 10 it now has filled in the district. The Mutual Pipe Line Co. has plans for a topping plant 1 mile west of Luling, near the Magnolia's topping plant. In the original part of the field, the Magnolia Petroleum Co. is drilling Nos. 3, 4 and 5 Merriweather at from 1,725 to 2,135 feet and rigging No. 6. It has set casing in No. 1 Byrd at 2,090 feet and is drilling No. 2 below 1,565 feet and No. 2 C. Byrd at 2,235 feet. The Royal Oil Co. is drilling in Nos. 4, 5 and 6 Tabor and is below 2,000 feet in No. 1 Garcia. The Caldwell Petroleum Co.'s No. 3 Hardeman is drilling in with No. 4 below 2,025 feet and No. 6 around 1,765 feet. Walsh and others' No. 4 Merriweather is at 2,176 feet.

The United North & South Oil Co. leads in operations in the field and across the San Marcos River to the southwest in Guadalupe County. It is drilling in No. 2 W. Mercer and also No. 2 A. Mercer. No. 1 Mills Mercer is below 2,100 feet and No. 1 Marion Mercer at 2,300 feet. No. 1 Milton Mercer is drilling in. No. 1 Marion Mercer is at 2,345 feet. Nos. 2 and 3 C. Byrd are drilling in at 2,170 and 2,155 feet. Derricks are up for No. 4 C. Byrd and No. 4 Hardeman and No. 2 Trammel. Nos. 3 and 5 Tabor are round 2,026 feet. No. 1 Manford in Guadalupe County is below 2,890 feet and Nos. 1 Shanklin and 1 Engelke around 2,450 feet.

The Sunland Oil & Gas Co.'s No. 2 Hardeman is drilling at 2,135 feet and Mooker Oil Co.'s No. 1 Fields at 2,225 feet. The Witherspoon Oil Co.'s No. 1 Merriweather is a derrick. Casing has been set in No. 1 Cosey at 2,165 feet. The Yoakum-Shriner Oil Co.'s No. 2 Hardeman has started and its No. 1 Mckeen is around 2,165 feet. The Alford Drilling Co. is coring No. 1 Walker at 2,090 feet. The Blackstone Oil & Gas Co.'s No. 1 Cole is below 2,100 feet. The Grayburg Oil Co.'s No. 1 Blackwell is setting a packer at 2,450 feet. Kennedy and others' No. 1 Cole is around 2,100 feet. The Hughes & Buchanan No. 1 Hardeman is below 1,900 feet. The East & West Oil Co.'s No. 1 Branyon, Carmichael and others' No. 1 Grady and Delcombre Petroleum Co.'s No. 1 Flowers are all below 1,400 feet. The Luling Oil Co.'s No. 1 Grady is idle at 2,207 feet. Thornton & Blackstone's No. 1 Cole is below 1,465 feet. The Texas-Trading Co.'s No. 1 Davis is at 1,332 feet. The Soda Springs Oil Co.'s No. 1 Belton is fishing at 2,300 feet. The Seals Creek Oil Co.'s No. 2 Proctor is rated at 500 bbls. initial. Tests rigging to start include Armstrong Brothers' No. 1 Dunlap, Jarmon Oil Co.'s No. 2 Moore, and C. W. Patton's No. 1 Purcell. Locations have been made for Tindley & Keough's No. 1 Martin and Universal Oil Co.'s No. 1 Herschap. The Big Gusher Oil Co.'s No. 1 Walker is bailing at 2,200 feet. The deepest test in Caldwell County is M. O. Rayor's No. 1 Walker, drilling in at 3,485 feet after setting liner.

Laredo Districts

Tank car shipments from the Webb County districts total 553 cars during October, or 35 cars less than during September. The shipments include consignments to the Tex-Mex Oil Refining Co.'s plant at Laredo and the Misko Refining Co.'s plant at Mirando City in the field. By deepening an old hole in the Mirando City-Schott districts from 1,600 feet to 1,935 feet the Magnolia Petroleum Co.'s No. 2 is making 75 bbls. 45 gravity. This is the fourth well in the 1,900-50 foot sand producing light gravity oil. The Chico Petroleum Co.'s No. 2 is rated at 100 bbls. at 1,675 feet and the Schott Oil Co.'s No. 19 is making 100 bbls. at 1,735 feet. O'Hearn and others have a well good for 150 bbls. initial at 1,720 feet in the Mid-Ojulas district on the escarpment. It is the third producer on the east of the escarpment. The Carnahan Oil Co.'s Nos. 56 and 57 are starting as offsets to the Witherspoon Oil Co.'s No. 13 and the Magnolia Petroleum Co.'s No. 14. The Schott Oil Co. is offsetting the Magnolia Petroleum Co.'s No. 15 with No. 20. Russell & White set casing in No. 1 Wolcott at 1,666 feet. The Laurel Oil Co. has a derrick up for No. 5 and in the Aviator district the Texical Oil Co. has a derrick for No. 1. The Shasta Oil Co. is getting ready for No. 3.

In Zapata County, the Boston-Mirando Oil Co. is getting ready to resume drilling No. 1, shut down at 2,400 feet for some time.

Valverde County, northwest of Webb, is getting a play again. The Havelein Oil Co.'s No. 1 Weatherbee, 15 miles northwest of Del Rio, is reported showing oil in a sand around 3,540 feet and 5 3/16-inch casing is being set. The Independent Operators' No. 1 Whitehead, 7 miles east of Del Rio, is drilling below 1,990 feet. Within the limits of Del Rio, the East Del Rio Oil Co.'s No. 1 is fishing for 8¼-inch bit at 3,500 feet. Hodges & Wright are rigging No. 1 Harrison, 6 miles southeast of Del Rio, and the Marland Oil & Refining Co. is reported to have a location for No. 1 Rose, 29 miles northeast of Del Rio.

The Alamo Gas Co.'s No. 1 Schaffer, at Gas Ridge, 7 miles southwest of San Antonio, is rated as a 1,500,000-foot gasser at 800 feet. A location has been made for No. 2 Schaffer.

The Border Gas Co., which supplies Laredo with natural gas, made a record in changing high pressure lines without disturbing the flow of gas of consumers. The company replaced 1¼ miles of 8-inch main west of Pleaditto recently. The gas was diverted from the old main to the new in 54 seconds, the connections being completed without interfering with the operations of the line. The company secures its supply from the Webb County fields.

More Wildcats

Cuthbert Oil Co.'s No. 1 Ruth, near Carlos, Grimes County, reported last week as a gas well at 2,818 feet, has sanded and an effort is being made to clear the hole. It blew dry gas for several days. The South Dayton Oil Co.'s No. 1, South of Liberty, bailed dry at 3,001 feet. The Producers Association's No. 1 Matthews, a joint deep test in the old Nacogdoches Field, is drilling below 1,650 feet. The King Petroleum Co. is drilling near Caledona, in the northern part of Nacogdoches County.

In Rusk County, the Southwestern Petroleum Co. is rigging for a test 3 miles north of Garrison. Osborne & Osborne have quit the "chicken feather" test on account of lease difficulties and made a location for another test. The Ohio-Red River Oil Co. and Wilson and others are drilling two tests in the eastern part of Angelina County. The Texas Co. is rigging No. 1 Pomykal, southwest of Brenham, located 4,000 feet from No. 2 Theilman, which it recently abandoned at 3,600 feet.

The Magnolia Petroleum Co.'s deep test, on Galveston Island, west of the city of Galveston, is below 5,100 feet. The log shows the island is sand and shale formation. The rig will be kept going as long as it hangs together.

Gulf Coast Operations

In the Hull Pool, the Republic Production Co.'s No. 23 Dolbear is pumping 200 bbls. at 2,465 feet and the Higgins Oil & Fuel Co.'s No. 3 Republic 100 bbls. at 2,100 feet. The Gulf Production Co.'s No. 4 Harrison fee is bailing at 2,575 feet. These are on the northwest side of the dome. On the north side, the Yount-Lee Oil Co.'s No. 5 Stengler shows oil at 3,200 feet.

On the northwest side, where the bulk of the work is being done at present, the Gulf Production Co.'s No. 5 Harrison fee is drilling at 1,345 feet. The Mecom Oil Co.'s No. 3 Mecom is working over. The Monarch Oil & Refining Co.'s No. 3 Miller is sidetracking at 2,235 feet, having lost the original hole at 3,785 feet. Its No. 7 Abel is at 1,626 feet and losing returns. The Yount-Lee Oil Co.'s No. 3 Taylor fee is drilling at 1,655 feet.

In the Orange Pool, the Kishi Development Co.'s No. 2 Smith-Foreman is a pumper at 3,180 feet. The Mutual Oil Co.'s No. 8 Chesson, a work over, is showing oil at 4,200 feet. The Orange Petroleum Co. is bailing No. 3 Berwick at 3,425 feet and the Monarch Oil & Refining Co.'s No. 1 Mecom is doing the same at 3,425 feet. The American National Oil Co.'s No. 1 Winifree, 1 mile northeast of production, set strainer at 3,475 feet and the well made a few heads, showing salt water and then sanded. It was washed and is now bailing.

The Supreme Oil Co.'s No. 1 Jackson is deepening below 4,150 feet. The Mutual Oil Co.'s No. 6 Chesson is working over, as is the Orange Petroleum Co.'s Nos. 4 and 5 Chesson. The Rycade Oil Co.'s No. 2-C State Land is drilling below 4,200 feet and No. 3-A State Land around 3,725 feet. The Sun Oil Co.'s No. 2 Brown, southeast of production, is below 4,524 feet. The Gulf Production Co.'s Nos. 13 and 14 Hager fee are starting to drill.

In the Goose Creek Pool, the Gulf Production Co.'s No. 7 Tabb is pumping 130 bbls. at 3,500 feet, after being drilled deeper. The Humble Oil & Refining Co.'s No. 26 on Galliard Peninsula is bailing at 2,150 feet, as is the Gulf Coast and Crown joint No. 18 Galliard at 3,070 feet, following a work over. Over on Spillman Island, the J. R. Copeland Oil Co.'s No. 1 is bailing again at 4,675 feet.

The Humble Oil & Refining Co.'s No. 10 Tabb is below 3,200 feet and No. 52 Smith at 2,546 feet, the sand showing some oil. The Gulf Coast and Crown joint No. 38 Galliard is fishing for pipe stuck in the hole. The bottom of the hole is at 4,725 feet. The Gulf Production Co.'s No. 2 Hirsch on State Land in the bay is rigging and No. 6 Chapman-Bryan is drilling at 3,665 feet.

At West Columbia, The Texas Co.'s No. 52 Hogg is at 3,450 feet and No. 53 is making 600 bbls. of fluid and oil at 3,700 feet. The Humble Oil & Refining Co. is deepening No. 1 Robinson at 3,100 feet. Same company's No. 1 Smith set screen at 3,270 feet and it headed up three times, showing 50 per cent sediment and water and then sanded. It is now being swabbed.

Other Pools

In the Humble Pool, The Texas Co. and Galena-Signal Oil Co. are both working over old holes. The Burley Oil Co.'s No. 26 Landslide is drilling. Callahan and others have two wells drilling on the Slaughter in the old part of the pool and the Sun Oil Co. is making a deep test on the northwest side.

In the Batson Pool, the Deutser Oil Co.'s No. 5 Trustee is below 300 feet. At Markham, the Rycade Oil Co.'s No. 1 Myers showed salt water at 3,400 feet and is being deepened. Schulling and others' No. 1 Newman on the west side is shut down around 3,600 feet. The Texas Co.'s No. 272 fee at Sour Lake is drilling below 2,200 feet. The Rycade Oil Co.'s No. 2 McFadden at Spindletop is still fishing for a roller bit in the hole at 3,370 feet.

In the Pierce Junction Pool, the Sun Oil Co.'s No. 1 Ritter on the north side is drilling below 3,600 feet. On the east side, the Humble Oil & Refining Co.'s No. 3 Whitehead is around 3,700 feet and No. 6 Fitzsimmons is deepening at 3,120 feet.

At Blue Ridge, the Mutual Oil Co.'s No. 1 Booth is preparing to test at 3,900 feet. Same company is drilling No. 1

(Continued on Page 100)

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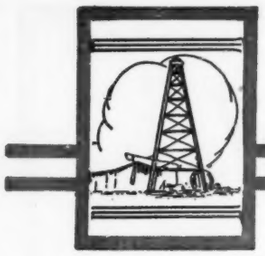

East Central Texas

By Staff Correspondent.

Skelly Oil Co. extends Powell Field with a 7,000-bbl. well on the Keith farm, Mathews survey. Sims supposed dry hole will make a small producer. Southwestern limit yet undefined. Average production for the week 293,000 bbls., but field is good for 325,000 bbls.

CORSICANA, Tex., Nov. 12.—The production of the Powell Field at the close of the week was 296,418 bbls. At the opening of the past week, Sunday, November 4, it was 288,000 bbls. It fell as low as 280,000 bbls. and it rose as high as 299,500 bbls. The average for the week was 293,000 bbls. The above are actual production figures. Powell is capable today of producing at least 325,000 bbls. but many wells are partly pinched in.

The Oil and Gas Journal's suggestion that the Sims Oil Co.'s test on the Boyd farm, Meador Survey, might be located a little too far east to make it a safe rule by which to measure the southwest extension proved sound, as the offset to it on the Keith farm, Mathews Survey, drilled by the Skelly Oil Co., came in at 7,000 bbls. from sand at 2,955-82 feet. The Skelly Oil Co.'s well is located 300 feet northwest of the Sims Oil Co.'s well, but the sand conditions in the two were quite unalike. The Sims well had dry sand at 2,962-68 feet and was drilled deeper and at 2,985 feet showed some oil. It is not expected to make better than a small producer. The Skelly well got the top of sand 7 feet higher and had 27 feet of it which proved rich in oil. The Skelly well gives the southwestern end of the field a new lease on life as there were many who believed the Sims test condemned it when it was first reported as a dry hole. The Webster test on the Boyd farm, Bragg survey, further southwest, but directly in line with the Skelly well and the producing wells northeast of it is at this writing the most interesting in the field. It should be finished today. If it is a producer it will add to the life and productiveness of the field as it would indicate that the locations between it and the gusher of the Skelly Oil Co. were all good for production, just as the Skelly Company's well makes the locations between it and the E. L. Smith Oil Co.'s producing wells on the Keith farm, Mathews survey, appear like velvet.

The test of McDonald and others on the Brown farm, White (upper) survey, in the Richland district, is about two-thirds full of salt water. It was drilled to 2,942 feet. The owners say the salt water is coming from behind the pipe. Pessimists think it is coming from the sand. The casing is being reset and time will tell. There is no oil showing reported.

The Humble Oil & Refining Co.'s production, which fell below 94,000 bbls., is again above 100,000 bbls. a day.

Production Reviewed

A detailed review of production by lease in the Powell Field as of November 5 showed a total of 439 wells which had had an initial production of 1,528,000 bbls., or an average of 3,481 bbls. to the well. The production on November 5 was 286,547 bbls., or 653 bbls. to the well. This average falling off from 3,481 bbls. initial output to 653 bbls. indicated a drop of 81 per cent, with a considerable number of the wells still in their flush stage. The production on October 29 was 330,497 bbls. from 417 wells and on October 22 was 330,107 bbls. from 406 wells. The average production per well has been falling for some time notwithstanding the unusual proportion of wells that started off at 10,000 bbls. a day or more.

The Humble Oil & Refining Co. maintained its lead as a producer with 93,956 bbls. from 120 wells, as against 102,007 bbls. a week before and 105,234 bbls. two weeks previously.

The Tidal-Buttram interests continued in second place with 44,291 bbls. from 35 wells as against 66,771 bbls. from 30 wells the week before, and 84,150 bbls. from 29 wells two weeks before.

The Gulf Production Co. had 28,613 bbls. from 49 wells, while a week before it was credited with 34,887 bbls. from 47 wells, and two weeks before with 34,877 bbls. from 46 wells.

The Humphreys Oil Co. with 70 wells had 15,460 bbls., and the week before 17,927 bbls. from the same number of wells, while two weeks previously it was credited with 21,865 bbls. from 68 wells.

The Texas Co. on the Fleming and McKie farms, with 18 wells, was producing 22,466 bbls., which was an increase over the week before when it had 18,696 bbls. from 14 wells, and two weeks before when it showed 8,850 bbls. from 10 wells. It also has a half interest in the Kent lease, making 4,869 bbls. from 14 wells on November 5, 7,390 bbls. from 14 wells on October 29 and 7,180 bbls. from 11 wells on October 22.

The Atlantic Oil Producing Co., with 17 wells on two leases, had 22,571 bbls. on November 5, 15,960 bbls. from 15 wells on October 29 and 15,126 bbls. from 13 wells on October 22.

The Mutual Oil Co. was added to the production list with 1 well flowing 4,300 bbls. on November 5. The Mutual is a Standard of Indiana company. The Standard is well represented in the Powell Field with the Humble Oil & Refining Co., Magnolia Petroleum Co., Atlantic Oil Producing Co. and the Mutual Oil Co. among the producing organizations.

Pipe Line Receipts

The Magnolia Petroleum Co. was handling about 71,000 bbls. of crude, but of this not over 41,900 bbls. was purchased oil. It was running about 28,800 bbls. for the Cobden Fuel Co. to relieve that company's crowded storage situation. The Humble Pipe Line Co. was running 81,400 bbls. The Sinclair Pipe Line Co. was buying about 3,750 bbls. and handling about 4,500 bbls. for the Humble Oil & Refining Co. Gulf pipe line runs were about 17,600 bbls. The Prairie pipe line was running about 19,200 bbls., The Texas Co. 20,500 bbls.

The following table gives the details of production on leases as of November 5 and October 29:

Powell Production by Lease and Company, November 5, 1923

	No. Wells	Initial Prod.	Nov. 5	Oct. 29
Humble Oil & Ref. Co.:				
Blumrosen	4	16,500	498	495
Brown	6	9,280	1,958	1,455
Cerf	2	17,200	5,937	4,026
Crews	3	32,500	9,852	13,600
Davis	7	47,800	18,417	14,336
Fleming A	5	33,500	7,831	10,790
Fleming B	2	7,300	2,396	3,280
Gentry A	10	24,850	1,365	1,310
Gentry B	2	9,500	800	630
Humphreys	11	38,400	14,641	12,109
Irvine A	5	24,700	250	222
Irvine C	10	36,400	858	4,117
G. Kent	12	45,700	4,967	7,399
R. I. Kent	1	2,000	....	....
W. J. McKie A	5	9,400	125	125
M. J. McKie B	9	14,000	265	1,948
Murchison	3	4,150	715	1,807
Ramsey A	8	22,000	5,940	4,049
Ramsey B	9	34,600	11,850	13,397
Walker	5	10,000	6,291	6 912
Total	120	439,480	93,956	102,007
Tidal Oil Co. & Buttram Pet. Corp.:				
Crews	5	56,000	13,130	24,795
Phillips	11	64,200	25,513	33,097
Ramsey A	8	43,000	4,675	7,807
Ramsey B	7	22,900	840	900
Thompson	4	4,400	133	173
Total	35	190,500	44,291	66 771
Gulf Prod. Co.:				
Barron	4	16,800	6,780	8,877
Barry	1	300	....	23
Blumrosen	3	4,900	200	229
Bush	1	4,000	2,377	3,111
Christian	6	15,400	245	432
Crews	6	67,000	12,050	15,520
Gentry	7	22,200	740	93
Murchison	8	21,100	5,422	5,255
McKie	1	400	142	134
Smith	5	22,650	330	1,000
Witherspoon	8	24,700	327	415
Total	49	189,450	28,613	34,887
Humphreys Oil Co.:				
Fair	1	1,250	25	25
Kent	8	7,500	630	805
R. I. Kent	3	12,240	85	147
Burke	1	200	5	....
McKie	53	191,000	14,875	16,940
Kenner	2	900	10	10
Springfield	2	2,700	10	....
Total	70	215,790	15,640	17,927
U. S. Tex Oil Co.:				
Burke	4	6,200	431	473
Ramsey	4	6,800	158	175
Total	8	13,000	589	648
Skelly Oil Co.:				
Gentry	2	800	130	126
Ramsey	3	5,100	5,227	4,845
Total	5	5,900	5,357	4,970
Kirby Pet. Co.:				
Brown	6	6,500	570	180
McKie	3	5,800	1,790	1,811
Total	9	12,300	2,360	1,991
McMan Oil Co.:				
Chapman	10	31,750	1,390	1,382
Chapman	5	5,000	840	1,173
Total	15	36,750	2,230	2,555
Roxana Pet. Corp.:				
Blumrosen	4	4,500	265	237
McKie	8	20,200	580	669
McKie A	8	17,530	5,100	3,380
Total	20	42,230	5,945	7,286
E. L. Smith Oil Co.:				
Keith	2	14,100	10,336	11,639
Ramsey	4	22,300	1,207	14,670
Total	6	36,400	11,543	26,309
The Texas Co.:				
Fleming	10	64,600	22,115	18,096
McKie	8	8,500	351	600
Texas Co.-Magnolia Pet. Co.				
Kent	14	52,000	4,869	7,390
Total	32	124,860	27,335	26,086
Atlantic Oil Prod. Co.:				
Irvine	13	40,100	1,715	1,710
Kellum	4	51,000	20,856	14,250
Total	17	91,000	22,571	15,960
R. E. Brooks:				
Cerf	2	11,060	5,643	6,190
Hughes Dev. Co.:				
McKie	13	29,400	550	713
Hughes Oil Co.:				
McKie	1	75	10	15
Empire Gas & Fuel Co.:				
Sweatman	1	1,750	837	1,300
Garland Kent:				
Fleming, Kent	2	11,000	9,550	9,422
Mitchell & Jones:				
Burke	2	10,600	672	760
Magnolia Pet. Co.:				
Irvine	1	6,500	....	....
New Domain Oil Co.:				
R. F. Kent	5	2,300	666	833
Simms Oil Co.:				
Blumrosen	2	765	167	127
Sun Oil Co.:				
Kent	4	11,700	742	630
Witherspoon Oil Co.:				
Burke	9	20,100	2,200	2,310
Mutual Oil Co.:				
Howell	1	18,000	4,300	....
Miscellaneous Cos.:				
Springfield and Christian	10	7,000	780	898
Grand total	439	1,528,000	286,547	330,497

Tank Farm Program

Tank farm storage in the Powell Field when the present tank building program has been concluded and all the tanks are filled will amount to 11,475,000 bbls. gross. Thus far there have been 132 tanks of either 55,000 or 80,000 bbls.

(Continued on Page 110)

Kansas Oil Field News

By C. D. Lockwood

The Kansas fields showed little change during the last week, reporting an increase of 9 operations for the past week with 19 more wells drilling than were shown on the report a week ago. For the seven days ending November 3, there were 34 locations, 53 rigs, 63 wells drilling and 69 wells shut down, making a total of 219 operations. On October 27, there were 29 locations, 54 rigs, 44 wells drilling and 83 wells shut down, a total of 210 operations. Resumption of drilling on a few wells previously shut down accounts for most of the slight increase in activity.

The Red Bank Oil Co.'s No. 1 Lowry, NW cor. SE NW, Section 17-35-17, Montgomery County, made 285 bbls. the first 24 hours 2½ feet in the sand topped at 1,191 feet. This well is about a quarter of a mile south of the same company's No. 1 Alloway, which was good for 100 bbls. a foot in the sand found at 1,216 feet.

In Butler County, Roy Ramsey had a rig on the ground for No. 1 Ray, SW cor. SE, Section 16-23-6.

In Cowley County, the Phillips Petroleum Co.'s No. 2 McGill, NE cor. SW NW, Section 21-34-7, was dry and abandoned at 3,176 feet. Shawver and others were spudding No. 1 Newton, NE cor. SW NE, Section 15-30-4.

In Sedgwick County, Travis and others' No. 1 Williams, NE cor. SW, Section 6-26-4w, was a rig.

In Barton County, McMahon and others had a rig on the ground for their No. 1, NW cor. Section 21-19-12w. Haynes and others were spudding No. 1, NW cor. Section 31-16-12w.

In Greenwood County, the Pulaski Oil Co. and Simmons were spudding No. 1 Barnes, SE cor. NW, Section 19-22-12. The Mission Oil Co. was spudding No. 2 Tucker, NE cor. SW, Section 22-23-10. Harwood & Winters had a rig on the ground for No. 1 Clark, NE cor. SW, Section 2-25-8. Deering & Marshall's No. 1 Duke, SE cor. Section 22-26-9, was making 25 bbls. from sand at 2,243-86 feet. The Gillespie Oil Co.'s No. 5 Jones, SE cor. NW SW, Section 21-23-13, was making 30 bbls. of oil from sand at 1,705-15 feet. The same company's No. 6 Jones, CNL SW, same Section, was drilling at 700 feet. Tatlock and others' No. 1 Parke, SW cor. NW, Section 9-26-17, had a rig on the ground.

In Elk County, Molson & Phillips' No. 1 Thompson, NE cor. Section 27-29-9, was making 5,500,000 feet of gas from sand at 1,453-75 feet. Laskey & Rhodes No. 1, NW cor. SE, Section 21-30-11, was estimated at from 15 to 20 bbls. after a 100-quart shot in sand at 1,222-57 feet. Clark and others' No. 1 Hanna, C SE NW, Section 26-29-9, was drilling at 450 feet. The Holsteed Oil & Gas Co.'s No. 1, NW cor. Section 8-31-11, was drilling at 2,700 feet.

In Cowley County, Torrance & Torrance's No. 3 Gehlke, SE cor. SW NW, Section 25-32-4, was drilling at 1,340 feet. J. A. Hull and others' No. 1-A Gehlke, NE cor. Section 26-32-4, was making 750,000 feet of gas from sand at 645-57 feet. The same company's No. 2 Gehlke, SE cor. NE NE, same Section, was drilling at 450 feet.

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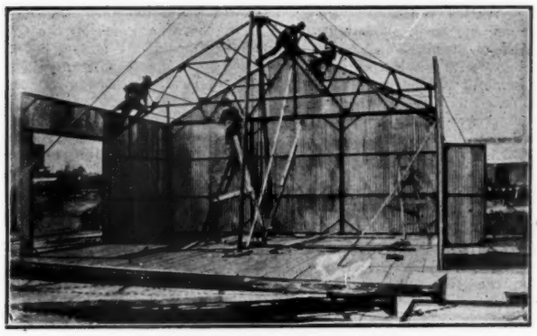

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West Kentucky-Tennessee

By Vern T. Whitney

Leeper Oil Co.'s No. 2 Helm, Owensboro district, estimated at from 75 to 100 bbls. initial. E. M. Treat & Co.'s No. 2 Sebe Smith, Warren County, makes 50 bbls. Copper Flash Oil Co.'s No. 5 Holliman, Hopkins County, 50 bbls. M. B. William's No. 3 Hobson, Davenport Pool, is good for 20 bbls.

BOWLING GREEN, Ky., Nov. 12.—The completion during the past week of the new Paragon trunk line, from Glasgow, Ky., on the L. & N. Railroad to Neeleys Ferry, on the Cumberland River, in Cumberland County, Kentucky, marks a very important step in the future development of the potential oil producing territory of southern Kentucky. This line is now being tested, and it is expected oil will be run by November 15. From Neeleys Ferry, branch lines are being rapidly extended to the many producing areas which are being discovered at widely separated points in Cumberland and Monroe counties.

It will also be of interest to learn that the new trunk pipe line of the Indian Pipe Line Corp. is expected to be ready for testing within 30 to 60 days. Rapid strides have been made in the construction, and already 31 miles have been laid from the big Morgantown Pike Station in Warren County, to 10 miles beyond Green River, towards Owensboro in Hancock County. The line from Bowling Green to Green River is 4-inch, and from there on 6-inch. Only 26 miles remain to be laid to connect with the line at Owensboro, which now runs from that point to the refineries at Lawrenceville, Ill.

The completion of these lines will undoubtedly prove a great stimulus to drilling activities throughout the entire southern and western Kentucky fields, especially in the territory traversed by them, and as this is all potential oil territory, it will not be surprising if some large producing areas are developed. With few exceptions, the greater part of the possible oil producing territory of southern and western Kentucky has been little more than scratched.

The greater portion of the new Indian line traverses a territory in which producing horizons will be found in the true Pennsylvania formations. The present production in the Owensboro district, in Hancock, Ohio and Daviess counties, is found in this series, and a well completed two years ago in western Butler County showed production in the same horizon.

On the other hand, the production in the territory served by the new Paragon line is found in seven producing horizons, beginning with the Coniferous, just below the Black Shale, down through the upper and lower Sunnybrook sands, the Clinton of Ohio, the Trenton Rock, and also in what is now believed to be a sand even below the Trenton. In this connection, geologists are of the opinion that the production found in the wells recently completed below the Pencil Cave are below the true Trenton Rock, while the recent completion by the Kanawha Oil Co. on the Williams farm, in the Sulphur Creek district of Cumberland County, at 1,445 feet below the black shale is located not only below the Trenton Rock but below the Knox Dolomite in the very lowest member of the Ordovician series, just above the Cambrian. If this is true, it is thought that this marks the lowest producing horizon ever discovered in the history of the industry.

As an instance of the large caliber of wells likely to be found in this district, it will be interesting to note that the well of E. M. Treat & Co., completed several weeks ago, on the Sam Riddle farm this week on test put 8 feet in a 1,000-bbl. tank in less than 12 hours, equivalent to about 508 bbls. It was completed at a total depth of 1,032½ feet, 90 feet below the Pencil Cave.

Week's Work

A resume of the week shows the following for the western Kentucky fields: 17 completions, with an initial yield of 238 bbls. from 12 producers and 5 dry holes. Compared with the previous week, this is an increase of 1 completion, 4 producers, 3 less dry holes, with an increase of 136 bbls. production.

Owensboro District

Two completions in the Pellville section and one in the Hurricane district marked the development in the Daviess-Hancock-Ohio County oil fields. The Leeper Oil Co. in No. 2 Helm, has a producer on the Amanda Stewart farm and will add a great stimulus to the Hurricane section. This well which finished up in the Jett sand at a depth of 460 feet made a remarkable showing and indicates a producer that should have an initial showing of between 75 and 100 bbls. While being drilled in through 20 feet of pay sand the oil filled up 50 feet over the tools and after being shot with 60 quarts of nitro filled up to the extent of 160 feet in 15 minutes. While the water was being bailed out the fluid reached a point 200 feet from the bottom of the hole.

Another Completion

In the Pellville section Boop & McDonough finished No. 3 Taber Johnson in the Barlow sand at a depth of 700 feet. It showed for a 9-bbl. pumper. Thompson & Johnston in No. 2 Ed Baize have a light producer. It is estimated this well will make 5 or 6 bbls. Unlike many other wells in this vicinity it showed strongly of oil in the Jackson sand and an effort will be made to produce both from the Jackson and Barlow sands. The Barlow sand was encountered at 717 feet and the well finished at 739 feet. The upper sand was shot.

C. E. Daugherty & Co., on the Virgil Miller No. 2, are having trouble with a crooked hole. This well should have been finished the last of the week, but the trouble has delayed drilling in. In this well the Jett sand is producing as in No. 1, but this formation was cased off and drilling pursued until the Jackson sand was encountered at about 600 feet, where the trouble resulted.

Drilling Is Hindered

On the Bob Miller across the road, Damron Bros. are progressing slowly with No. 3. Salt water from the stray sand is hudering drilling and it may be the last of the coming week before the well is completed. The Newton Oil Co., on the Bickett farm in the Hurricane section, is now engaged in a reaming job, at about 300 feet, to shut off a strong flow of water, while White and others on the Burdette lease, just recovering from a fishing job, have resumed operations and should finish up their venture the first of the week.

The Kentucky Oil Co. is moving a rig on the Chambers farm, southeast of Pellville for the first test on this lease. Leeper and Roesner will begin moving a rig this week to the Bailey farm. This lease adjoins the Amanda Stewart farm on the west and lies between it and the Garret lease. It is looked upon as one of the most likely pieces of property in that section.

In the Maceo section the Chicago Petroleum Syndicate is shut down awaiting tools to complete a fishing job. Drilling on the Taylor farm was progressing nicely when the contractors lost their tools at a depth of about 1,000 feet. A caving hole made fishing difficult, resulting in the suspension of operations until other tools could be secured.

Warren County Development

The banner completion in the Warren County fields was No. 2 Sebe Smith 40 acres, in the northeast extension area, making 50 bbls. at 1,240 feet. Shale was found at from 1,050 to 1,130 feet and sand from 1,225 to 1,240 feet, and was given a 40-quart dose. E. M. Treat and Co. operators of this property have staked off a number of new locations on their properties in this area which will be drilled up. In this section the Plantation Consolidated Development Co. finished No. 8 W. A. Gott 75 acres at 996 feet. After shooting it was estimated at 5 bbls. Nos. 9 and 10 are drilling.

In the old Davenport Pool, M. B. Williams scored a good one in his No. 3 Hobson at 893 feet. Shale was found from 705 to 785 feet and sand from 857 to 872 feet, which was treated to a 40-quart shot. Total depth of the hole was 893 feet. It is conservatively estimated at 20 bbls. and was drilled 1,000 feet north of the other two producing wells proving a number of locations. It also proved the north end of the other part of the Hobson property being developed by the Penhoma Oil Co. No. 3 drilled in the Willoughby Lane, by the Nottulyn Oil Syndicate of Chicago, is dry in the shallow sand at 525 feet. Drillers are waiting orders before going deeper.

In the White Stone Quarry district, southwest of Bowling Green, the W. F. Coast Oil Co.'s No. 4 Davidson is making 3 bbls. on power in the 1,000-foot sand.

Cooper Flash Co. Scores

In the Hopkins County area, the Copper Flash Oil Co. finished what is said to be one of the best wells in the district in No. 5 Holliman, which adjoins the discovery wells on the Williams farm, near Nortonville. It is making 50 bbls. after being shot with 100 quarts at from 450 to 476 feet. Two miles north of Nortonville the Pleasant View Oil Co. got a duster in No. 1 Kingston at 670 feet.

Cumberland County Development

A test which will be watched with a great deal of interest in the Cumberland County Field was spudded in during the week on the Ethel Baker farm in the Marrowbone Creek district by Douglass St. Clair. It is in the northwestern part of the county near the Metcalf line and is strictly wildcat.

At Bear Creek, the Paragon Development Co. encountered sulphur water in the Waverly in No. 1 Spear which was cased off. Drilling is now progressing at 300 feet.

Hook, Ross & Wise got a duster in No. 1 Sam Riddle, in the Sulphur Creek district, at a total depth of 761 feet, 150 feet below the Pencil Cave. No. 2 is spudding. W. S. Raydure is drilling No. 3 J. Riddle at 150 feet. It is an offset to No. 1 which is a 50-bbl. producer. The Morris Petroleum Co. is drilling Nos. 6 and 7 Huddleston at interesting depths.

At Kettle Creek, No. 1 John Crawford of Thompson & Co., was given a shot in the first Sunnybrook sand and will make 5 bbls. The Atlantic Oil Producing Co.'s well on the Dowell farm, adjoining the Kim Crawford, was shut down most of the week on account of a heavy gas flow struck at 240 feet. The South Kentucky Oil Co.'s No. 1 L. S. Blythe is making hole at 300 feet. Lynch & Co. have finished reaming No. 1 Scott and will set casing below the cave. W. S. Raydure has resumed drilling on No. 1 Sam Smith at Dooley's Hill and states he will carry the hole down to the 1,000-foot level. Raydure's No. 1 Porter Huddleston is making hole at 1,250 feet.

At Judio Creek, the Judio Development Co. is drilling at 250 feet on its No. 3 J. B. Hume. In the Big Renox Creek district, No. 1 Strange of Baker and associates is drilling at 150 feet.

Other West Kentucky Completions

Allen County: White Plains Oil & Gas Co.'s No. 17 Buchanon, dry at 460 feet; D. B. Willoughy's No. 2 D. W. Willoughby, dry at 496 feet.

Barren County: Fred Moore's No. 4 Adams, 10 bbls.; L. J. Emery, Jr. & Sons, No. 6 Harston, 3 bbls.

Simpson County—J. H. McClurkin's No. 1 Wiley Powell, 2 bbls. at 525 feet.

LOOK FOR MORE MERGERS

The oil industry, the New York Times thinks, is on the brink of a new era of mergers, consolidations and deals which will attract as much attention as did the stock dividend period of the closing months of 1922, according to opinion expressed in some quarters of the financial district. When the period of overproduction in the petroleum industry set in during the earlier months of the year, the predictions were freely made in both banking and financial circles that it would be only a question of time before many of the smaller companies would be overcome by the strain of carrying large inventories of both crude and refined oil products. Thus far only one or two smaller companies have been forced into receivership, while others have been either taken over or merged with larger and stronger companies. If predictions come true, however, an increase in the number of mergers and "deals" may be expected during the next six months.

"GUSHER" BREAKS AT SEA

Due probably to shifting strata in the Caspian Sea, an unusual phenomenon in oil wells was noticed recently near Baku. A geyser suddenly began erupting from the sea, 2 miles off the coast, and in two hours of activity spurted at a height of 70 feet, throwing off stones as well as oil. The eruption was accompanied by flames. On the spot a small island formed after the "gusher" died down.

ANOTHER GRAHAM GASSER

ARDMORE, Okla., Nov. 10.—Another big gasser has been brought in in the Graham Field in the Atlantic Oil Producing Co.'s No. 2-B on the Lahman farm in the center of the southeast of the northwest of the northeast quarter of Section 25-2s-2w, which is making 25,000,000 feet from sand topped at approximately 1,970 feet with the drill still in it at 1,995 feet.

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Fields of the Central West

By Whit

Federal Oil Co. gets four producers in the Lima Field; No. 3 Hiltner, Allen County, pumps 45 bbls. and extends field; B. Porter and others' No. 16 Haley, Hancock County, 35 bbls. Ohio Co.'s No. 5 Schauwecker, Wood County, pumps 30, and Union Gas & Oil's No. 9 Holbrook, North Weir, flows 25 bbls.

FINDLAY, Ohio, Nov. 12.—The arrival of real winter weather has brought about a slump in completed work throughout the Central West Field, and few completions are reported from any of the numerous producing sections of the several States.

In the old Lima Field of northwestern Ohio the week reports 10 completions, which is more than all completions reported from Indiana, Central Ohio, Illinois, and eastern Kentucky, although the western Kentucky section makes a better showing and very little is being done there at this time.

In the new field recently opened in Darke and southern Mercer Counties, southwest of Lima, there is practically nothing reported outside a very few drilling wells, and across the line in Jay County, Indiana, the same conditions prevail.

The best completion of the Lima Field reported for the week was the Federal Oil Co.'s No. 3 on the northeast corner of the Phil Hiltner farm, Section 10, Marion Township, Allen County, and practically a new extension to the old field. This well pumped 45 bbls. flush. This company's No. 1 on the Edward Youngpeter farm, Section 11, same township, is a 10-bbl. pumper, while No. 2 came in at 20 bbls. and its No. 1 Fred Miller, same section, at 12 bbls. In Spencer Township, same county, the South Fork Oil Co.'s test on the northeast corner of the Mary E. Gross farm, Section 27, pumped 15 bbls., putting Allen County in the lead as to the number of completions for the week.

In Logan Township, Auglaize County, Wesley Sprague's No. 5, on the southeast corner of the L. V. Bowersock farm, Section 5, showed a flush of 25 bbls.

In Eagle Township, Hancock County, between Lima and Findlay, B. Porter and others' No. 16, on the northwest corner of the J. H. Haley farm, Section 5, pumped 35 bbls. This pool is showing some very nice producers of late.

Southeast a short distance from Cygnet, in Bloom Township, Wood County, the Heacock Oil Co. has drilled in No. 18 on the Delia S. Clark 80 acres, Section 7, and has a 15-bbl. pumper. This well struck top of the Trenton sand at 1,100 feet and drilled 375 feet in a total depth of 1,475 feet. This lease is along the well known "Hogs Back" or "Sucker Rod Belt," that runs through the center part of Wood County, and starts in east of Findlay in Hancock County and terminates somewhere near Waterville, west 20 miles from Toledo in Lucas County. The supposition is that this same belt runs into Michigan, but no one has yet been able to find the Michigan extension unless it is in the vicinity of Dundee, Monroe County, where a small well is producing on the Frank Roe farm.

Near Bowling Green, in Plain Township, Wood County, the Ohio Oil Co. drilled in a 30-bbl. pumper in No. 5 on the northeast corner of the A. J. Schauwecker No. 2 farm, Section 22, at a depth of 1,581 feet, and the Allen Oil Co.'s test on the Roe heirs', better known as the D. Hartman farm, Section 28, and located in the southeast corner of the farm, showed a production of 8 bbls., the oil going to the Sun Pipe Line Co.

No completions were reported for the week from the new Niagara Limestone Field near Shiloh, north of Mansfield, in the northern part of Richland County, the most northwesterly development in the Central Ohio Field, although several wells are due for completion. This field will no doubt remain active during the winter season, as it is practically a natural gas proposition, and is showing some of the best volume wells in the field at this time.

In Chatham Township, Medina County, the Vale Oil Co.'s No. 35, on the C. G. Chapman, Lot 1, is reported at 2,250,000 feet from the Clinton sand at a depth of 2,950 feet.

The Wiser Oil Co. is drilling its No. 1 on the Frank E. Krebs lease, Section 20, Avon Lake village, Lorain County.

Indiana Field

The only completion reported from Indiana was in the Princeton Field, in the southwestern part of the State, and was the Murphy Oil Co.'s No. 3 on the E. Whiting, Section 30, Center Township, Gibson County, showing a production of 20 bbls. Top of sand was found at 1,465 feet and the oil pay at 1,496 feet, or 31 feet in the sand. No reports emanate from two important wells being drilled in White Township, this county. One that is due for completion is being drilled by the Eagle Oil Co. on the W. F. Chapman, Section 24, something like 3 miles east of Mt. Carmel, Ill. A few miles to the northeast of the Chapman test, Perry Tichenour and others are reported drilling a real wildcat test on the T. W. White, in Section 9, White River Township.

Illinois Field

Development work in most all parts of Illinois are at a standstill, and not a single test going down in the vicinity of Centralia, where work was so active in the past. The majority of the wells south of Centralia, in Marion County, are still producing, though the production has been reduced from this time last year. The Brown & Kuester wells east of Centralia are still holding up to normal.

In the Murphreysboro gas field of Jackson County, there are four strings of tools running and some small edge production is being brought in, though gas is being sought to increase the supply furnished several of the cities in that section after being mixed with artificial gas. Reports are that this gas plant which is owned by the Mid-Egypt Oil & Gas Co., was the first to make a 100 per cent success of the mixture of natural and artificial gas.

At Opdke, 10 miles southeast of Mount Vernon, in Jefferson County, the Opdyke Oil Co. is reported below 2,150 feet with a test well on the E. I. Esters farm, Section 17, Pendleton Township. The drilling is being done by the Benoist Bros., for a number of farmers in that section who organized the Opdyke Co. The casing drawn from the Lorenzen well, which was pulled from that test, is being used in the Opdyke well. The project has been given up several times, but more money comes forward and as a result a real deep test is being made.

In Mount Carmel Township, Wabash County, a deep test is being put down by George Porter and others on the Veihman farm, Section 2, several miles northwest of Mt. Carmel.

Near Alto Pass, in Union County, William Mack Smith of Pennsylvania is putting down a test.

In the Waterloo Field, in Waterloo Township, Monroe County, southeast of St. Louis, the Kaskaskia Oil Co.'s No. 7 Dena Acker 81 acres, Section 11, pumped 4 bbls. at 426 feet.

Eastern Kentucky

There is a slacking of development in all parts of the Eastern Kentucky Field, and very little will be done during the winter, outside of getting in material for spring work, which, if the roads are favorable, can be done when sleighing comes or the roads are in a dry shape. With an improvement in conditions, this field will show a large number of wildcat wells. Reports from Ayresville, Oil Springs, Keaton, Blains, Paintsville, Salyersville and other points are that operators are shutting down.

The people of Johnson and Lawrence Counties are opening their eyes to the fact that better road conditions will bring about an active play in the oil fields, and the best piece of news emanating from these two counties is the long hoped-for road from Louisa to Blaine and thence to the Morgan County line will soon materialize. According to M. E. S. Posey, Division Road Engineer, engineers are now working out the route and the contract will be let in the spring. This road will traverse one of the beauty spots of Eastern Kentucky and pass through the North Berea or Blaine Field of Johnson and Lawrence Counties, and the construction of a good highway from the new proposed highway to Salyersville and Paintsville, would pretty nearly cover the productive oil fields of Johnson, Lawrence and Magoffin Counties, and while benefiting the oil people would mean the making of these three counties from a business standpoint by increasing the value of lands and take business to the three main points, viz: Louisa, Paintsville and Salyersville.

In the North Weir Field of Lawrence-Johnson County, the only completion for the week reported was the Union Gas & Oil Co.'s No. 9 J. H. Holbrook up the big Blaine Creek to the northwest of Ayresville a mile and a half. The well is reported at 25 bbls. flush.

In the South Berea Field of Johnson-Magoffin Counties, in the Flat Gap neighborhood, the Carroll Oil & Gas Co. drilled in what shows for a nice gas well in a test on the Marion S. Rose farm. Hudson & Collins' No. 13 H. C. Conley, reported at 4 bbls., and the Carter Oil Co.'s No. 9 Milt Wheeler, at 5 bbls.

In Estill County, a 20-bbl. flush well was reported drilled by Raydure & Coombs in a second test on the Millard Smith farm.

In Owsley County, the Petroleum Exploration Co. is drilling No. 1 B. C. Manning and rigging up at No. 1 W. S. Hamilton and No. 1 A. J. Barker farms. This company is really doing more wildcatting than any other concern in the eastern part of the State.

The Indian Refining Co. of Lawrenceville, Ill., report a total run from the Kentucky fields of 111,835.93 bbls. for the month of October. This means that the runs from Lee, Estill and Powell Counties, in the East Kentucky division, amounted to 27,399.85 bbls., while in the western Kentucky Division, the runs from Allen County, were 35,826.91 bbls.; Warren County, 24,268.58 bbls., and from the Owensboro district of Hancock and Ohio Counties, 4,240.59 bbls. This makes a total of 64,336.08 bbls. from western Kentucky and 47,499.85 bbls. from eastern Kentucky.

News of Mexican Fields

By George Blardone

TAMPICO, Mex., Nov. 9.—Two pay completions in the Cacalilao sector of the Panuco Pool, and one in the South Fields, sum the successful wells during the past week. Some four tests, all pools, cover the failures. In the Cacalilao sector of the Panuco district, International Petroleum Co. led off with the best well of the week, No. 27, in Lot 5, being rated good for 4,000 bbls. at 1,800 feet. Mexican Sinclair Petroleum Corp., No. 27, in Lot 3, plugged back to 1,800 feet for a 700-bbl. well, the drill having been sent to a little under 2,000 feet. In the South Fields, Huasteca Petroleum Co., (Mexican Petroleum), completed its No. 7-B Tierra Blanca at a subsea level of 2,053 feet, rating it as good for 1,500 bbls.

The failures were: Panuco district, East Coast Oil Co.'s No. 429 Ingenio, abandoned at 2,159 feet. International Petroleum Co.'s No. 26, Lot 5 Cacalilao, a duster at 2,515 feet, and No. 8 Tanchicuin is in the same predicament at 2,500 feet. Transcontinental Petroleum Co.'s No. 26, Lot 4, Cacalilao, is a dry hole at 1,930 feet. In South Fields, Mexican Sinclair Petroleum Corp.'s No. 2, Lot 331 Amatlan, developed some salt water at 2,810 feet, and it has been plugged and abandoned.

Fields in General

With bad roads, and all that they imply, field operations the past week were rather slow. In the Cacalilao sector of the Panuco Pool, operations were as follows: La Corona Petroleum Co.'s No. 41, in Lot 4, is drilling in the brown limestone at 1,520 feet; No. 44, same, is spudded; and No. 45 is a derrick. Over in Lot 1, No. 31 is drilling in a limestone banded with chert at 1,845 feet; and No. 43, same, is drilling in limestone at 1,905 feet. Kone & Willis, No. 3, Lot 1 Cacalilao (2-C), have shut down for orders at 2,205 feet, having had a showing of oil from something under 2,000 feet. Mexican Gulf Oil Co.'s No. 37, Lot 1, is drilling in the San Felipe at 1,470 feet. International Petroleum Co.'s No. 27, Lot 4, Cacalilao, is drilling in shale at 1,800 feet; and in Lot 5 there its operations are as follows: No. 24, is running 6-inch at 1,860 feet, the formation being a limestone; No. 40, drilling in the San Felipe at 1,310 feet. In Lot 3, No. 29 is drilling in gray shale at 200 feet, and No. 30 is drilling at 160 feet. In Lot 4, No. 44 is a derrick, and No. 45 is drilling in gray shale at 1,195 feet. Mexican Sinclair Petroleum Corp.'s operations in Lot 3 are as follows: No. 15 is drilling in limestone at 1,485 feet; No. 28 is cementing 8-inch in a similar formation at 1,315 feet; No. 33 is drilling in an asphaltic formation at 1,560 feet, while No. 24 is drilling in limestone at 1,725 feet. In Lot 1, No. 7 (4-B) is rigged and ready to spud. Rich Mex Oil Co.'s No. 3, Lot 1 Cacalilao (all in fraction 4-B) is drilling in limestone at 1,710 feet; No. 11, same, is drilling at 2,145 feet; in the lime with some showing; No. 13 has cemented 8-inch in the San Felipe at 1,200 feet; No. 16 is drilling in gray shale at 2,145 feet; No. 22 is drilling in lime with a showing at 1,945 feet and No. 24 is drilling in shale at 895 feet. Transcontinental Petroleum Co.'s No. 31,

(Continued on Page 107)

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Pennsylvania-West Virginia

By D. S. Wakenight

Deep sand territory in southeastern Ohio got only fair producer of the week; Southern Oil Co. is owner. Shallow territory furnished light pumpers and dusters. West Virginia has few completions and southwest Pennsylvania still fewer.

PITTSBURGH, Pa., Nov. 12.—The election holiday and the first touch of winter interfered with development work in the Eastern fields during the week. Eastern operators, since the Western reductions, are of opinion that the Eastern grades will be reduced and probably bring the price for crude of the Pennsylvania grade down to the low as of June 28, 1921, when it dropped from $2.50 to $2.25. In this event it will make little impression on field work.

Southeastern Ohio

A fair producer in the deep sand territory in the southeastern Ohio was all that saved the Eastern fields from a continuous run of light pumpers during the past week. This well is the Southern Oil Co.'s No. 7 on the A. and I. McCourtney farm, in the northwest quarter of Jackson Township, Perry County, a section that furnished a number of good producers during the early year. At 30 feet in the Clinton sand the well began to fill up and when shot will be good for 50 bbls. a day. In Section 23, Harrison Township, Knox County, F. Marion Snyder & Co. completed and shot in the Berea grit No. 10 on the George Miller farm, not good for more than 2 bbls. a day.

In Lot 34, Newton Township, Licking County, I. J. Denbow & Co. made a location and are building a rig for a test on the W. H. Weiss 85 acres. This is far enough in advance of production to make it important. In Section 28, Highland Township, Fairfield County, the Rushville Oil & Gas Co. started a well on the Robert Hyde lot, in the village of Rushville. In Section 6, Deerfield Township, Perry County, Ralston & Maynard are drilling on the W. P. Smith farm.

In the Newark district, Madison Township, Licking County, Spindler & Donaldson got better than an average well at No. 4 on the C. A. Bounds farm. The first 24 hours after it was drilled through the Berea grit and shot they bailed 18 bbls. It is the best producer completed in this development. In Section 14, Harrison Township, Knox County, Young & Curren's test on the Soloman Horn farm is a duster in the Berea grit. In Section 12, Washington Township, Monroe County, the Carter Oil Co.'s test on the Isaac McVay farm is a strong gasser in the Maxon sand. In the same district, Bentz Oil & Gas Syndicate started to drill on the James Howell farm. In Monroe Township, Harrison County, S. M. Elliott's No. 6 on the C. S. Heavlin farm is a duster in the Berea grit. In Section 23, Perry Township, Licking County, the Carter Oil Co. started to drill a second test on the O. E. Romine farm. In Section 22, Franklin Township, Ralph Bros. started to drill No. 4 on the Boy Scouts' farm. In Independence Township, Washington County, E. Clark, Jr., is drilling on the Peter Hurland farm. F. H. Leidecker & Co. are drilling another test on Edward Matheny farm.

West Virginia

Drilling old wells from an exhausted sand to a lower formation in the hope of bringing them back into the producing list is almost as much of a feature in some districts as starting new work. In a number of instances the result has been quite satisfactory. In Courthouse district, Lewis County, West Virginia, Carl Wohline & Co. had such an experience at their test on the J. C. Cowl farm. It was formerly a light well in the Gantz sand and was drilled down to the Gordon sand and is good for 20 or 25 bbls. a day. In new work, Lewis County has more than in several years. There is a double incentive in drilling in this county. When a well fails to produce oil it almost invariably is a gasser. In the same district, however, A. P. Bailey & Co.'s test on the O. B. Gaston farm, proved an exception. It was drilled through the fifth sand and found neither oil or gas. On Reedy Creek, Curtis district, Roane County, Robert D. Cummin drilled a test on the P. H. Malhon farm through the Berea grit and scored a duster.

Good Gasser in Gilmer County

On Jobs Run of Little Kanawha River, DeKalb district, Gilmer County, the Hope Construction & Refining Co. completed a Big Injun sand gasser good for 3,400,000 feet a day on the Louis Bennett heirs' farm. In the same district, C. W. McCall & Co. are drilling a second test on the Miller heirs' farm. In Center district, the Carnegie Natural Gas Co.'s second test on the H. M. Westfall farm is a gasser in the Big Injun. In DeKalb district, the Laurel Run Oil Co.'s test on the Lily M. Winger farm is a gasser in the same formation. In Clay district, Wetzel County, the Carnegie Natural Gas Co.'s test on the James Murphy farm is a fourth sand gasser. In Carroll district, Lincoln County, the Laurel Development Co.'s test on the W. W. Carroll farm is a gasser in the Big Injun sand. In the same district, C. C. Wolf's second test on the Warren Neal farm is a gasser in the same formation. In Center district, Calhoun County, the Hope Natural Gas Co. drilled in a Big Injun sand gasser on the Lee Gainer farm. The same company is building a rig on the Ella R. Despard farm.

Duster in Braxton County

Braxton County has been coming to the front with a good deal of new work. In Birch district, the West Virginia Central Gas Co. completed a test on the John A. Chamberlain farm, a duster in all sands. In Otter district, the Hazel Atlas Oil Co. is rigging up on the W. A. Priest farm. In the same district, Norris & Cain made a location on the C. A. Boggs farm. In Center district, Gilmer County, the Carnegie Natural Gas Co.'s test on the O. W. O. Hardman farm is a duster and abandoned. The same company is rigging up at a second test on the Meldine Marshall farm. Ritchie County continues to hold first place in active development work. In Union district, Robert Elder & Co.'s second test on the J. E. Day farm is dry. In Clay district C. F. Vincent and others have a gasser in the Big Injun sand at a test on the W. F. Farley farm. In Grant district, the Boyce Oil Co. has a Keener sand gasser at a test on the John Freeman farm. In Murphy district, J. F. Deem's second test on the C. J. Williamson farm is a 3-bbl. pumper in the Maxon sand.

Light Pumper in Tyler County

In Union district, Tyler County, Joseph Hall & Co. have a 10-bbl. pumper in the Keener sand at a test on the Morgan Henderson farm. In Union district, Wood County, Bowser & Ekas have a 10-bbl. pumper in the Berea grit on the Ethel & C. C. Davis farm. In Grant district, Wetzel County, the Victor Oil & Gas Co. is testing for oil in the Gordon sand on the John Miller farm. The Imperial Oil & Gas Products Co. has a 10-bbl. pumper in the Big Injun sand at No. 5 on the E. M. Smith farm in Central district, Doddridge County. In Union district, Ritchie County, the Hope Natural Gas Co.'s test on the Mitchell heirs' farm completed last week, will be put to pumping from the Big Injun sand. Since the well was completed they have been bailing 10 bbls. a day. In the same district, the South Penn Oil Co. has gassers in the third salt sand at tests on the H. A. Miller and E. M. Brown farms. In New Milton district, Doddridge County, Trainer & Travis have a duster at a test on the J. H. Ross farm.

On Tanners Creek, DeKalb district, Gilmer County, the Hope Construction & Refining Co. has completed a good gasser in the Big Injun sand at No. 3 on the J. J. Hardman farm. Near Metz, Mannington district, Marion County, the Eastern Petroleum Co. has drilled No. 3 on the O. N. Koen farm from the Big Injun to the Gordon sand. It is a good gasser in the lower formation. In the same locality, the same company drilled No. 1 on the Henry Campbell farm from the Big Injun to the Gordon sand. Nothing was found in the Gordon and only a light show of oil in the Big Injun sand. In New Milton district, Doddridge County, Trainer & Summers drilled their test on the Paul Allen farm through the Big Injun sand to a total depth of 2,290 feet, dry in all sands. In Central district, the Jackson Oil & Gas Co. has a rig up on the E. & W. A. Price farm. In Simpson district, Harrison County, the Bridgeport Lamp Chimney Co. is due in the sand on the J. R. Jones lot. In Sardis district, J. W. Barnett drilled his test on the J. C. Duncan farm 12 feet into the Gordon sand, showing light. On McFarlan Creek, Murphy district, Ritchie County, Mellen & Co. drilled a test on the Rachel Bryan farm through the Big Injun sand, showing for a light pumper.

Starting Test Wells

In Liberty district, Marshall County, the Manufacturers Light & Heat Co. is moving rig timbers to a location on the Mary E. Courtright farm. In Union district, the U. S. Stamping Co. made the location for a second test on the Catherine Hazlett farm. In Sardis district, Harrison County, J. W. Johnson & Sons have drilled to a depth of 2,500 feet on the Bramer farm and shut down. In Ten-Mile district, Godfrey L. Cabot started to drill on the M. W. Davis farm. In the same district Jesse F. Randolph has the rig completed for a second test on his own farm. The Manufacturers Light & Heat Co. is due in the sand at a test on the W. L. Jackson farm. On Indian Creek, Grant district, the Owens Bottle & Machine Co. is drilling on the French Williams farm. In Mannington district, Marion County, William Haught started to drill on the F. M. Renner farm. In the same district, S. N. Elliott is hauling tools to a location on the L. A. Orndoff farm. In Union district, Harrison County, the Philadelphia Oil Co. is drilling its old No. 10 on the W. R. Allen farm from the Gordon to the Speechley sand. In New Milton district, Doddridge County, Trainer & Travis have the rig completed for a second test on the A. Drainer farm.

Shut Down for Orders

In Mannington district, Marion County, the Eastern Petroleum Co.'s test on the Campbell heirs' farm has been drilled to a depth of 3,135 feet and shut down for orders. In Clay district, Wetzel County, the Carnegie Natural Gas Co. is rigging up on the R. L. Carmen farm. In the same district, the same company is down 3,150 feet on the Aaron Furbee farm and shut down for a cable. In Greenbrier district, Doddridge County, the Raccon Oil Co. has rig timbers at a location on the Augustus Drainer farm. In Center district, Wetzel County, the Johns Gas Co. has rig timbers at a location on the Frank Burley farm. In Union district, Lincoln County, the Laurel Development Co. started to drill on the J. D. Melton farm. The Cambrige Carbon Co. is due in the sand on the Rosella Adkins farm. In Center district, Calhoun County, A. H. Jackson has rigs up on the J. E. Snyder and Edward Jackson farms. In Center district, Gilmer County, the Carnegie Gas Co. is rigging up on the Louisa Fitzpatrick farm. In the same district, McIntosh & Miller are building a rig on the James A. Walton farm. In Birch district, Braxton County, the West Virginia Central Gas Co. started to drill on the Luther Allyson farm.

The Chartiers Oil Co. started to drill down its old well on the Baptist Missionary lot in Center district, Gilmer County. In DeKalb district, Clem Morris & Co. are building a rig on the Roberts Bros.' farm. In Salt Lick district, Braxton County, Miller & Simmons have started to drill on the R. Q. Dennison farm.

Southwest Pennsylvania

On Wagon Road Run, Springhill Township, Greene County, the Ayers Oil & Gas Co. has a light gasser in the fourth sand at a test on the John Riggs farm. In Aleppo Township, the Carnegie Natural Gas Co. drilled its second test on the George Murray farm through all sands to a total depth of 3,634 feet. It is a very light gasser.

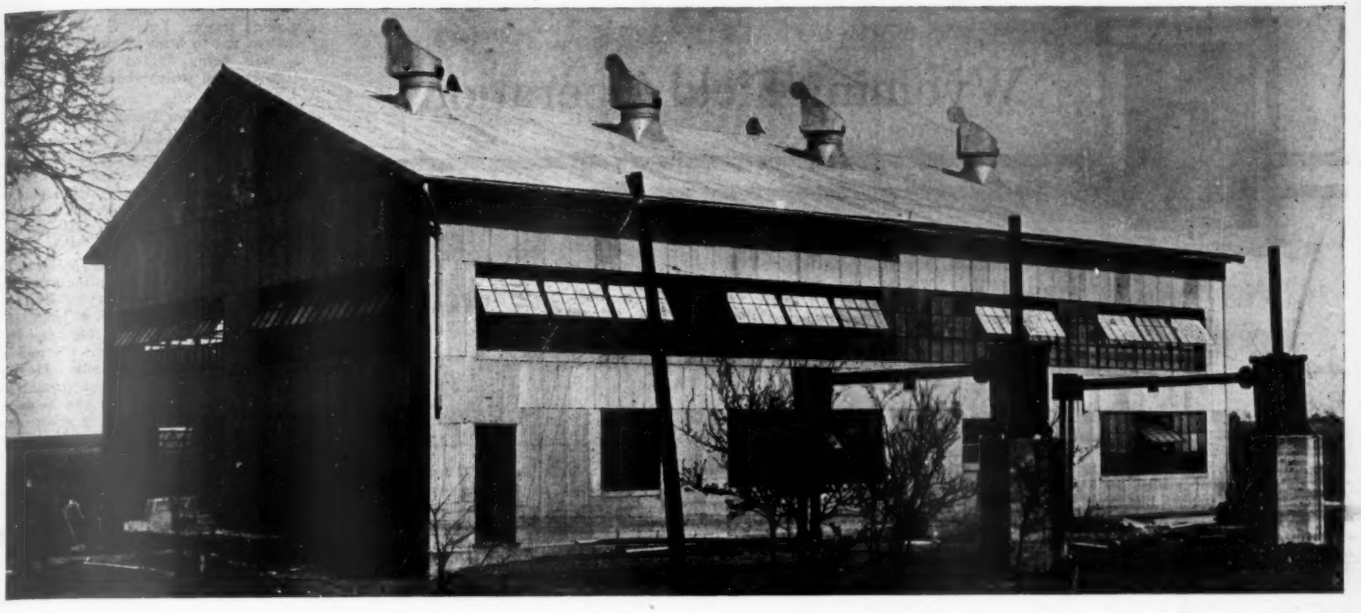
News from Fields of Canada

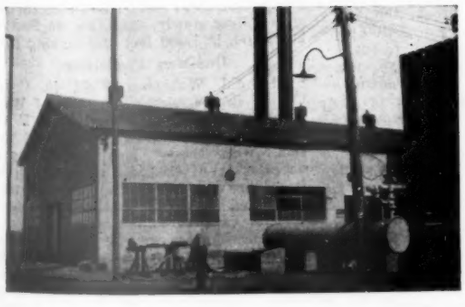
By Victor Lauriston

CHATHAM, Ont., Nov. 10.—The most striking feature of recent Canadian developments is the discovery, reported last week, of commercial oil production in the lower Trenton limestone in the southern portion of Kent County, Ontario. The location is the Glenwood Natural Gas Co. test on the Hugh Shanks farm, Romney Township, about a half mile west of Port Alma. This test got the Trenton limestone at 2,712 feet, somewhat deeper than usual, after getting about 400,000 feet a day of gas in the Tilbury sand. It was drilled into the Trenton limestone several hundred feet below the "break" without encountering a show, and was generally regarded as a failure when, at 3,562 feet, or 850 feet in the Trenton limestone, it came in with a flush production estimated as high as 250 bbls. a day, with about 500,000 feet of gas per day. The production is reported to be within 10 feet of the bottom of the Trenton lime.

Just what the well will make in the way of settled production is still undetermined. Since it first came in, it has been flowing by heads at intervals of between four and six hours. A 2-inch line is being laid to the nearest railroad shipping point at Stevenson; and in the meantime the production is being hauled in tank wagons. The actual production,

(Continued on Page 96)





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Wyoming Field Operations

By F. B. Taylor

Producers & Refiners' No. 4, Salt Creek, good for 250 bbls. Midwest subsidiaries bring in three producers, Wyoming Oil's No. 26-A, 750 bbls.; Wyoming Associated's No. 11-A, 650 bbls., and Mountain & Gulf's No. 36-A, 235 bbls. Duster in the Lakota sand taken to indicate limitation affecting Teapot.

CASPER, Wyo., Nov. 10.—The Wyoming and Montana oil operators were hard hit by the market reduction of Friday; the reductions ranged from 40 cents on the higher grades to 30 cents on the medium crudes like Salt Creek and Big Muddy. This brings Salt Creek oil to 60 cents per barrel and the smaller operators claim this is less than the production price.

Strenuous efforts are being made by many small operators to obtain storage on credit, but so far little success has been had as the steel mills are filled with orders and their products are able to command cash in nearly every market.

There is considerable talk of shutting down wells in the fields and taking the loss in that way rather than trying to produce at a loss, although it is recognized that if the smaller tracts shut down their wells, the Midwest and other large firms will gain thereby through the taking of oil from the shutdown tracts.

Duster in Lakota

One of the most important completions of recent months is that of the Producers & Refiners on Section 6-39-78 in the east side of the Salt Creek Field. This is the second well in the Salt Creek area to be drilled to the Lakota sand and it is a duster in that formation.

For some years past it was believed by many experienced operators and geologists that the Lakota sand would prove oil bearing in Salt Creek and probably be found to contain more oil than the famous second Wall Creek sand that holds the bulk of the production at present. The Midwest drilled one test to the Lakota sand which showed for about 400 bbls. and this was the only well in the field for about two years or until last week when the Producers & Refiners Corp. completed its well. This last completion is well out on the eastern boundary of production and shows that the Lakota oil bearing area will not extend out as expected, beyond the limits of the second sand area. This is a great disappointment to many and reduces the expected potential production of the field to a considerable extent, the probable area of the oil in the Lakota is now thought to be about the same as the first Wall Creek sand which covers about 6 square miles. It also makes things look bad for the Lakota sand in Teapot.

To Wildcat in California

The Mutual Oil Co. and the Consolidated Royalty Oil Co. are planning a wildcat campaign of great magnitude for the coming year in the oil regions of California. These two companies are generally regarded as Rocky Mountain firms, but during the past year the Consolidated Royalty sent its geologists to California on an investigation of the Cretaceous formations in that State that underlie the Tertiary. It is believed the Cretaceous in California carries oil although the great depth that will have to be drilled to reach the sands of this formation has so far prevented any exploration of the Cretaceous horizons. The Mutual and the Consolidated have an acreage of about 60,000 acres which the two firms propose to explore to the Cretaceous sands by means of rotary tools and very deep wells.

The Cretaceous is the main producing formation of the Rocky Mountain region and it also appears in a part of Texas, but these two are the only places in the world where the Cretaceous produces petroleum. California takes its oil from the Tertiary formations that overlie the Cretaceous and many geologists believe that the California Cretaceous will be found oil bearing also.

The Fargo Oil Co. has been having some trouble with its new pipe line from the Poison Spider Field to Casper on account of the cold weather. The oil has congealed at several points during the recent cold snap and caused a shutdown at the pumping stations; now, however, the Fargo is putting in the heaters that were to have been installed this month and as soon as these are ready the crude can be sent through the line at all times. The early cold of this fall caught many of the oil companies unprepared and caused several premature shutdowns in pipe lines.

Craig Well Nearly In

The Hamilton Dome well near Craig, Colo. is shut down with boiler trouble for the present. The hole is close to the top of the Frontier sand and it is expected that only a few more days' drilling will prove the well.

The well of the Hatfield Oil Co. reached the Muddy sand at 3,846 feet and found a show of gas that will make a commercial well and at the last report the drilling is continuing in the sand with hopes that oil will come in below the gas. The well is near Rawlins in Carbon County.

The Producers & Refiners report four fishing jobs at various points where this firm is drilling wells. No. 4 on Section 15-40-79, in the Salt Creek Field has been completed and is good for 250 bbls. daily. All the other wells of the firms are reported routine drilling.

The Texas Co. is drilling three wells, one a wildcat south of Moneta, in Fremont County, and the other two in the Lost Soldier, also cleaning out several wells in Salt Creek and Big Muddy.

The Midwest completed three good producers in the Salt Creek Field and of the other wells being drilled by this firm in wildcat and othr districts, there are none sending in interesting reports. The three completions were 26-A of the Wyoming Oil Fields Co., Section 23-40-79, which started off at 750 bbls. from the second Wall Creek sand at 1,492 feet; the No. 11-A of the Wyoming Associated on Section 14-40-79, which is good for 650 bbls. in the second Wall Creek at 1,890 feet and the 36-A of the Mountain & Gulf on Section 13-40-79, which started off at 235 bbls. from the second Wall Creek sand at 2,396 feet.

Pipe Line Hearing

The Public Service Commission of Montana heard the case of the Illinois Pipe Line Co. last week at Shelby, Mont., and officials of the pipe line firm appeared and pleaded against a lowering of the rates from the Sunburst Field to the town of Sunburst. It was shown at the hearing that the Illinois carried 319,000 bbls. of crude from August, 1922, to August, 1923, and of this amount, 80,000 bbls. was sent over into Canada. The Illinois Pipe Line Co. has a capital investment of $190,109.83 in pipe lines and equipment in the Sunburst Field, consisting of about three-fourths of a mile of 2-inch line, 33 miles of 3-inch line, 4 miles of 4-inch and 10.5 miles of 6-inch line.

Pipe Line Runs

The runs from the various fields totaled a slight increase the past week over the previous one.

Salt Creek	119,000
Teapot	4,815
Big Muddy	4,035
Grass Creek	3,200
Elk Basin	1,700
Notches	75
Greybull, etc.	125
Rock River	3,800
Lance Creek	410
Poison Spider	575
Osage	740
Hamilton Dome	510
Lander	365
Pilot Butte	80
Lost Soldier	3,875
Ferris	100
Cat Creek	4,720
Kevin Sunburst	500
Miscellaneous	625
Total	149,240

Salt Creek Test

The Salt Creek test is about finished on the first zone and the whole field is expected to be done by the last of this month. Instead of three districts of testing for the field, the operation has been divided into six divisions and the production is made 100 per cent from the wells in the division under test. The dividing of the field into six divisions instead of three will make the test take longer than the previous one that was completed last August.

The new test is expected to show a heavy increase in the 100 per cent production over that of last August. A large number of completions has brought up the production of the field and while the pipe lines are now taking 45 per cent of the crude, as of the August figures of total production, the field is expected to show a much larger production when the six district totals are compiled.

With the completion of large storage capacity at Casper and also at the new tank farm of the Sinclair Pipe Line Co. at Clayton, east of Glenrock, the Salt Creek production could be run at 100 per cent for some time, if necessary, but it is hoped by the more conservative operators that the field will be held down to a minimum of production during the present period of low prices because of the greater gain when the market advances.

The Alaska Development Co., operating on Pine Mountain in Natrona County, completed a large gas well and then the well went into water in the lower part of the sand, drilling itself in. The gas was struck in the 10 inch hole and it was estimated at better than 60,000,000 feet before the water came in. The well is now flowing high above the derrick and as it is located on the crest of Pine Mountain, it can be seen flowing from points 40 miles away. The Alaska Development Co. is a local company composed of Wyoming capital and some members from the Pacific Coast and has been operating on Pine Mountain Dome for several years.

The Southwestern Exploration Co., the new firm that resulted from the old Gunsburg & Foreman firm of the Mid-Continent, has fished out the lost bit in the deep hole drilling south of Medicine Bow about 14 miles. This well found commercial production in the Muddy sand about 4,035 feet and then the well started making water. Later the oil came back, though not in large quantities. The well is now being drilled on down to the Dakota sand which should come in about 4,500 feet.

Sheldon Dome Wildcat

The wildcat of the Marine Oil Co., drilling north of Riverton about 50 miles, on the Sheldon Dome, is down 3,100 feet and making hole, the 10-inch casing was set and found tight at 3,070 feet and the hole is in excellent shape. No showing of any consequence has been found yet.

The Utah Oil & Refining Co.'s well east of Thermopolis about 30 miles, at the foot of Black Mountain, is considered a pumper. This well found a black oil in the Amsden sand under the Tensleep at 3,310 feet and it is thought the well will make around 60 bbls. daily. However, the market for black oil at present does not pay the operators in the fields producing that quality to market same. Another field, the Warm Springs, near the strike at Black Mountain, is shut down because of there being but little demand for the product. The Warm Springs ships its crude by a pipe line to Thermopolis, where a refinery is located that has been operating on this crude but, owing to the low demand, the field and refinery are both shut down.

The Union Oil Co. is reported as having purchased a site for a tank farm near Shoshoni to hold its black oil production in the Maverick Springs Field in Fremont County. The Maverick Springs Field was first opened in 1917 and found to contain a heavy, black crude that proved a lemon to many operators who jumped into the territory. The Ohio, Carter and the Sheridan Wyoming oil companies developed the field to some extent and later the Union became interested and drilled a number of wells that are producers. Just how much these wells will make is problematical because there never was any storage placed in the field that would enable the operating firms to make a comprehensive test of the wells, and, of late, in view of the way some other black oil operations have acted, it is stated the Maverick Springs well will prove a great disappointment to the companies when they are started to producing. It is thought that the wells will only make a few barrels each, instead of the hundreds they are rated as good for on the showings made when first drilled in.

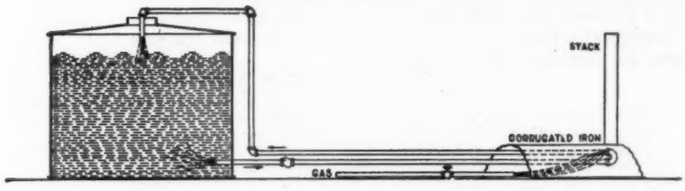
In the Baxter Basin Field, Sweetwater County, the Midwest has shut down its well on Section 10-16-104 for the winter and is fishing at 2,570 feet on Section 11-16-104. The Ohio is drilling its gasser to the Dakota on Section 22 16-104, and the Producers & Refiners Corp. is drilling at 2,400 feet on Section 36-17-104. The Associated Oil Co. and the Montacal Oil Co. have two wells in operation, one on Section 23-17-104 is down 3,275 feet and drilling slowly, the other on Section 26-17-104, is 1,000 feet and making hole.

One-Man Production

The old Wakeman Field in Crook County in the northeast corner of Wyoming is having some activity. E. J. Rachau and others have completed two small wells there. This operation produces some of the first grade oil to be found anywhere, but the wells are very small and are only about 400 feet deep. The oil varies from a straw color to a translucent green and is refined locally. It is found in sandy shale lens in the Tertiaries and while individual wells have been found that started off around 30 to 50 bbls., the average is less than 5 bbls., and few wells produce more than a barrel each when settled down to a steady production. It has been held that by putting in gas pumps and placing a vacuum on these Tertiary productions, considerable oil can be had, but the experiment has never been tried out here. The whole proposition is looked upon as a one-man production for it does not pay enough to warrant investment by the larger companies.

The deep test of the Producers & Refiners Corp., near Thornton, in Crook County, about 10 miles east of the Wakeman Field, is drilling again after waiting for a delayed string of casing.

TYPES of TRET-O-LITE PLANTS



TREATING TANK GAS HEATER

No. 9—CIRCULATING PLANT

Above is illustrated a very simple form of TRET-O-LITE plant for treating 10 to 100 barrels of emulsion per day. It depends upon heat for mixing the TRET-O-LITE with the oil and is recommended for treating oil in small tanks on leases not equipped with boiler, pumps, or other means of agitation.

Heater should be located about 40 feet away from the tank and on a lower level, so that the pipes slope downward from tank to heater. The line from bottom of tank should contain a check valve to prevent the oil from backing up.

Gas, oil, or wood may be used for firing.

OPERATION. The heater is fired and the emulsion begins to circulate and agitate.

TRET-O-LITE solution is then sprinkled over the surface of the emulsion. A 2 per cent solution is recommended. Use ½ to 1 gallon of TRET-O-LITE per 100 barrels of fresh cut oil; tank bottoms (B. S.) require more, usually 1 to 2½ gallons.

Continue the agitation until the emulsion breaks.

Allow to stand until the water has settled.

Draw off the water, leaving pipe line oil in the treating tank.

This is one of a number of prevailing types of TRET-O-LITE plant. Our book, "TRET-O-LITE," diagrams and describes 9 different types of plant, varying in capacities from 10 barrels to 25,000 barrels per day, and upward. We will gladly mail you a copy, on request.

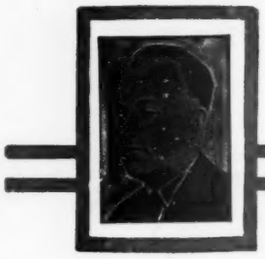
"Simplest, Most Thoro, Most Economical Method of Treating Cut Oil."

Wm. S. Barnickel & Co.
St. Louis, Mo.

Tret-O-lite

Reg. U. S. Pat. Off.

Offices and Factory: Webster Groves, St. Louis Co., Mo.



California Field Operations

By L. P. Stockman

Drop of 23,700 bbls. in production. Union completes three producers at Santa Fe Springs, No. 8 Farwell, for 4,682 bbls.; No. 19 Bell, 2,700, and No. 21 Bell, 2,500 bbls. Transport's Bush well, Kern County, increases 190 per cent in October. Santa Fe Springs' decline rapid.

LOS ANGELES, Cal., Nov. 10.—The production at Long Beach for the week was 238,000 bbls.; at Santa Fe Springs, 233,000 bbls.; Huntington, 78,000 bbls.; Torrance, 18,000 bbls.; Compton, 1,300 bbls.; and the balance of the State 195,000, a total of 763,300 bbls., and a reduction of 23,700 bbls. from the preceding week.

Three new Santa Fe Springs producers were added to the field's list by the Union Oil Co A total new yield of approximately 8,200 bbls. daily was contributed by No. 19 Bell, No. 21 Bell and No. 8 Farwell. All are producing from the Meyer zone.

No. 21 Bell was completed at 4,700 feet with 4½-inch casing. A 2,500-bbl. well was secured. The next day No. 19 Bell came in with 2,700 bbls. of 35 gravity oil.

The third well, No. 8, came in on the Farwell property at 4,682 bbls. 34 gravity. The well is one of the most satisfactory of late Santa Fe producers and is the largest well the Union has secured on the property. Three previous producers are yielding on this lease and three more drilling. The drilling projects are No. 6, at 3,817 feet, milling; No. 9, at 4,286 feet, fishing; and No. 10, at 4,390 feet, rotating.

No. 19 was the twelfth Bell producer. Six wells are still in various stages of drilling on Bell's ranch, three expected to be producers within the week. Those to come are No. 4, at 4,685 feet, cemented; No. 14, at 4,700 feet, cemented; and No. 24, at 4,700 feet, swabbing.

Kern County Surprise

Transport Oil Co.'s Bush well which came in at 1,600 bbls. about a month ago, on the Maricopa Flats, increased more than 100 per cent during October, proving the biggest surprise of the month and stimulating interest in Kern County development. The well maintained a daily average of 3,000 bbls. and is now doing better than 3,300 of 27 gravity oil.

Completed at 3,910 feet, the well is the deepest flowing in Kern County and uncovered a new sand which has gasoline content of oil 10 degrees higher than any found elsewhere in the county. It is making 4,000,000 feet of gas daily which runs a gallon of gasoline to the 1,000 feet, a much higher gasoline showing even than the Southern fields. According to field experts the well is capable of doing 5,000 bbls. were it opened up.

Among the big companies holding important acreage in the vicinity of the Bush well, the Pacific Oil has the largest amount, since it holds every other section, due to its land grant. Union Oil has acreage adjoining both Bush and Lake View No. 2 properties, while the Pacific bounds the transport lease on the south and east. Other companies having property which this well has brought nearer production include the Standard, Associated and California Petroleum.

Santa Fe Springs Falls

Twenty-two wells in the Santa Fe Springs Field quit producing during the last 15 days of October, a majority because of lack of sufficient gas pressure. Several wells were good producers, ranging from 1,000 to 2,000 bbls. daily. Many were edge wells, but several were in the thickly drilled areas.

This field is going down far more rapidly that anticipated.

Production figures compiled by the General Petroleum Corp., estimated a decline of 60 per cent within five months.

The General Petroleum estimates, based on their holdings at Santa Fe Springs, show that October production should have been 1,172,000 bbls., whereas, it was but 1,140,000, or 32,000 bbls. less than expected. Estimates based on the depletion of the field, including these new producers, show that in March, 1924, total production for the General Petroleum should be 544,000 bbls., but according to the October showing, it is doubtful if it will reach 40 per cent of that figure.

While the decline is more marked at Stanta Fe Springs, Long Beach also shows a tendency to swing downward, General Petroleum leases showing a total of 600,000 bbls. during October, and estimates for March, 1924, placed at 400,000, indicate a drop of 33 1-3 per cent. No such decrease is anticipated at Long Beach, since the sands there are holding up well.

There was a marked depletion of gas at Santa Fe Springs. During September the daily output was 210,000,000 feet, during October 150,000,000. Of this, the General Petroleum uses approximately 40,000,000 to 50,000,000 feet daily for its refinery which has been pinched in 10,000 bbls. since the middle of the month.

October Production

October's total production of crude appears to have been approximately 25,298,000 bbls., or a daily average of 816,000.

Complete figures for September show a total of 25,762,487 bbls., a daily average of 858,749 bbls. October's daily average output was more than 42,000 less than September's.

One of the two important completions of the week was credited to the Santa Fe, which brought in its No. 14 Torrance, just across the street from the Midway Northern No. 1 producer. No. 14 was drilled to 3,724 feet, and came in with an estimated flow of 1,600 bbls. The oil tests 26.3 gravity, and the flow has not steadied down completely, but it is expected to make a run of between 1,500 and 1,600 bbls. daily.

With the Union Oil Co. still holding the record of the only producer at Compton, this company is pushing its activities on its various leases. The No. 3 Callender is down to 2,915 feet and drilling in gray sand. Gardena No. 1 has been drilled to 3,000 feet, is now rotating in gray sand; No. 1 Rosecrans is rotating in hard sand at 2,885 feet and No. 1 Carson is drilling in surface at 816 feet, while the fifth well is a rig.

Completions Reported

Completions this week were:

Santa Fe Springs: Union Oil Co.'s No. 8 Farwell, No. 19 Bell, No. 21 Bell, No. 24 Bell, No. 4 Alexander; Standard Oil Co.'s No. 2 Jordan, No. 7 Weisel, No. 4 Helper; Oscar Howard's No. 3 Bell; General Petroleum's No. 79-C Santa Fe, No. 9-A Santa Fe; Amalgamated Oil's No. 2 Fulton; Wilshire's No. 2 Bandini.

Long Beach: Interstate Oil Syndicate's No. 1-A Jones; W. H. Fisher's No. 1; Shell Co. of California's No. 3-A Wilbur; United Oil's Prudential; Marine Oil Corp.'s No. 22 Well; Sherman Oil Co.'s No. 1 Decker.

Huntington Beach: Central Oil Co.'s No. 2 Well.

Torrance: Petroleum Securities' No. 1 Marble, Santa Fe's No. 14 Torrance.

Late News From the Fields

OKLAHOMA

The Oklahoma Producing & Refining Corp.'s No. 1 Washington, SE cor. NE SW, Section 32-17-8, Creek County, was making 43,000,000 feet of gas from sand at 2,808 feet.

The Skelly Oil Co.'s No. 1 Colbert, SW cor. SE, Section 4-13-8, Okfuskee County, was making 240 bbls. from sand topped at 3,515 feet. The Link Oil Co.'s offset, No. 1, SE cor. SW, same section, was drilling at 1,300 feet. The No. 1 Colbert offsets The Texas Co.'s No 1 Harjo, NW cor. NE, Section 9-13-8, which was brought in for 400 bbls. last September. The Blackwell Oil & Gas Co.'s No. 1 Kumler, C NE SE, Section 9-27-1w, Kay County, was running 8-inch casing after making 8,000,000 feet of dry gas from sand topped at 2,370 feet.

Crosbie and others' No. 1 Foster, NW cor. NE SW, Section 28-8-8, Seminole County, which got a show of oil with a hole full of water last week, was drilling in black slate at 3,135 feet.

The Independent Oil Co. and Sinclair Oil & Gas Co.'s No. 1 Foster, NW cor. NE SW NW, Section 33-8-8, which was erroneously reported as completed, was running 5-inch casing at 3,020 feet.

The Twin State Oil Co.'s No. 1 Chapman, SE cor. SE SW, Section 15-19-6, Payne County, was dry and abandoned at 3,950 feet.

In northern Seminole County, the Cromwell Oil Co.'s No. 1 Bruner, NW cor. NE SW, Section 15-10-8, which was reported last week as making 250 bbls. from sand at 3,480-84 feet, was not helped by drilling 2½ feet deeper.

Creek County Completions

The Pure Oil Co.'s No. 2 Yarhola, NE cor. NW NE, Section 17-15-8, Creek County, made 1,700 bbls. after a 150-quart shot in sand at 3,740-75 feet. The same company's No. 6, SW cor. NE, same section, was treated to the same amount and was making 1,000 bbls. from sand at 3,700-24 feet.

The Peters Oil Co. and others' No. 7, CNL SE SW, Section 36-27-11, Osage County, was making 25 bbls. after a shot of 100 quarts in the Bartlesville sand at 1,565-90 feet. The Mutual Oil Co.'s No. 6, SW cor. SE SE, Section 2-22-10, was shut down at 2,235 feet on top of the sand and was estimated to be good for 60 bbls. The Peer Oil Co.'s No. 2, CEL NE NW, Section 28-20-12, was drilling at 580 feet. Munn Bros. were spudding No. 4, SW cor. NW NE, Section 28-20-12.

In Kay County, the Besdor Oil Co.'s No. 1 Chambers, SW cor. SE, Section 9-25-2w, was drilling at 2,071 feet. The Brown Oil Co.'s No. 1 Simmons, NE cor. SE, Section 27-25-2w, was drilling at 2,112 feet. Embry & Leewright's No. 1 Davis, NE cor. SE SE, Section 36-25-2w, was shut down at 1,096 feet.

The McMan Oil & Gas Co.'s No. 4 Warren, CWL SW NE, Section 27-25-1w, was dry and abandoned at 2,534 feet. The Texas Co.'s No. 1 Gillett, SE cor. SW, same section, was drilling at 2,325 feet. Thornton & Bailey's No. 1 Frazier, NE cor. SW, Section 30-25-1w, was shut down at 1,120 feet. The Camden Oil & Gas Co. and the Marland Refining Co.'s No. 1-A School Land, SE cor. NE, Section 33-25-1w, was making 25 bbls. after being plugged back from 2,599 feet and shot with 20 quarts in sand at 2,183-93 feet. The same company's No. 3-A School Land, CEL SE NE, same section, was dry and abandoned at 2,623 feet. The same company abandoned its location for No. 4 School Land, CSL SE NE, same section.

The Blackwell Oil & Gas Co.'s No. 7-B Corrigan, CEL SE NE, Section 34-25-1w, was drilling at 2,253 feet. The Pennok Oil Co.'s No. 6-B Endicott, CSL SW SE, same section, was rigging up cable tools at 1,848 feet. The same company's No. 9 Endicott, SW cor. SE SE, Section 34-25-1w, an old well making 51 bbls., was shot with 50 quarts in sand at 2,505-49 feet and was increased to 165 bbls.

Shot Increases Output

The Amerada Petroleum Corp.'s No. 25 Woods, NW cor. NE, Section 34-25-1w, an old well, making 90 bbls., was increased to 400 bbls. after a 70-quart shot in sand at 2,460-2,538 feet. McCaskey & Wentz' No. 42 McKee, C NW SW, Section 34-25-1w, was shut down for 6-inch casing at 2,533 feet; No. 43 McKee, C SW SW, same section, was shut down at 2,564 feet; No. 44 McKee, same location, was shut down at 2,220 feet. The Comar Oil Co.'s No. 4 Clements, CEL SE NW, Section 34-25-1w, an old well, was cleaning out without results after a 20-quart shot in sand at 1,905-85 feet. The same company's No. 9-A Clements, NW cor. SW NW, same section, was not showing any production after receiving 20 quarts in sand at 2,522-35 feet.

The Comar Oil Co.'s No. 12 Clements, CEL SW NW, Section 34-25-1w, was shut down at 2,477 feet; No. 17 Clements, NW cor. same section, was cleaning out with 800 feet of oil in the hole after being shot with 20 quarts in sand at 1,988-2,014 feet; No. 18-A Clements, C NE NW, same section, was shut down at 1,941 feet; No. 21-A Clements, C NW NW, same section, was cleaning out without results after a 20-quart shot in sand at 2,000-19 feet; No. 22-A Clements, CEL NE NW, same section, was fishing for tools at 2,000 feet; No. 3-C Endicott, SW cor. NW SE, same section, was shut down without production following a 20-quart shot in sand at 1,984-2,004 feet; No. 4 Endicott, NE cor. SW, Section 35-25-1w, an old well, was pumping salt water from sand at 2,515-38 feet.

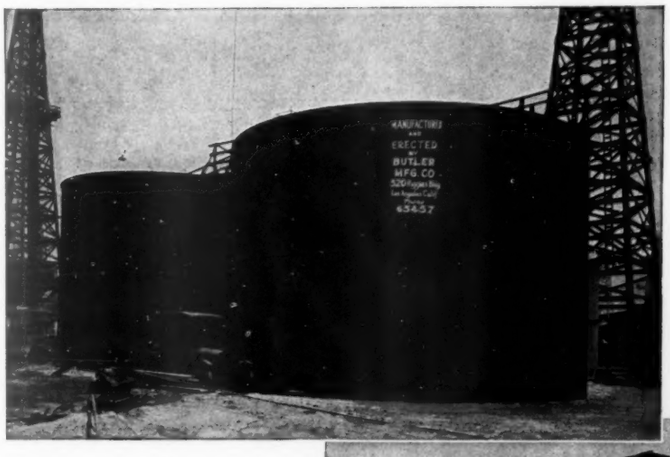
In Noble County

On the Noble County side of the line in Section 2-24-1w, there were 26 rigs shut down on the Comar Oil Co.'s leases. In addition there was five other wells shut down at shallow depths in the same section. The Comar Oil Co.'s No. 8-A, Blubaugh, NE cor. SW, Section 2-24-1w, an old well, was drilling at 2,027 feet; No. 10 Blubaugh, CSL SE SW, same section, was fishing for tools at 2,230 feet; No. 16 Blubaugh, CWL SW NE SW, same section, an old well, was making 378 bbls. naturally from sand at 2,207-31 feet; No. 16-A Blubaugh, CEL SE NW SW, same section, was drilling at 2,505 feet; No. 20-A Blubaugh, CSL SE NW SW, same section, was making 329 bbls. naturally from sand at 2,228-38 feet; No. 21-A Blubaugh, C SW, same section, was making 355 bbls. naturally from sand at

(Continued on Page 114)

Butler Bolted Tanks

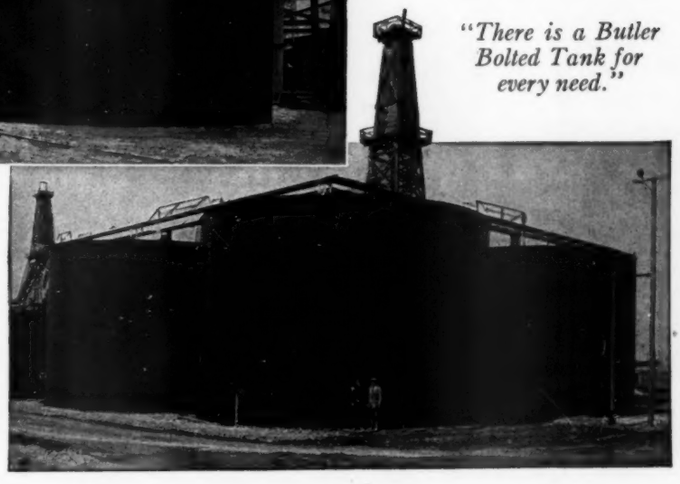
—*Where Service and Durability are desired*



The two tanks shown at the left are of 3,000 and 5,000-barrel capacity.

They were erected for the Jameson Petroleum Co. at Santa Fe Springs, Cal.

"There is a Butler Bolted Tank for every need."



At the right are shown three Butler Bolted Tanks of 5,000-barrel capacity each.

These tanks were erected for the Globe Refining Co. of Huntington Beach, Cal.

Dependability—Reliance!

Butler Bolted Tanks are found where good tanks are used. Dependability means much to the user. Reliance means safety. The user of Butler products knows he can trust Butler Tanks for he knows they are made right. He knows he can rely on Butler Tanks, for he knows they are designed right. He knows there is a principle back of them. Users of Butler Tanks in every section know Butler Service means quality.

Descriptive literature and prices sent on request.

The following reliable organizations can serve you in their respective territories. Ask them, or get into direct connection with us.

May Tank & Sup. Co.
Casper, Wyoming
and branches
Peerless Steel Co.
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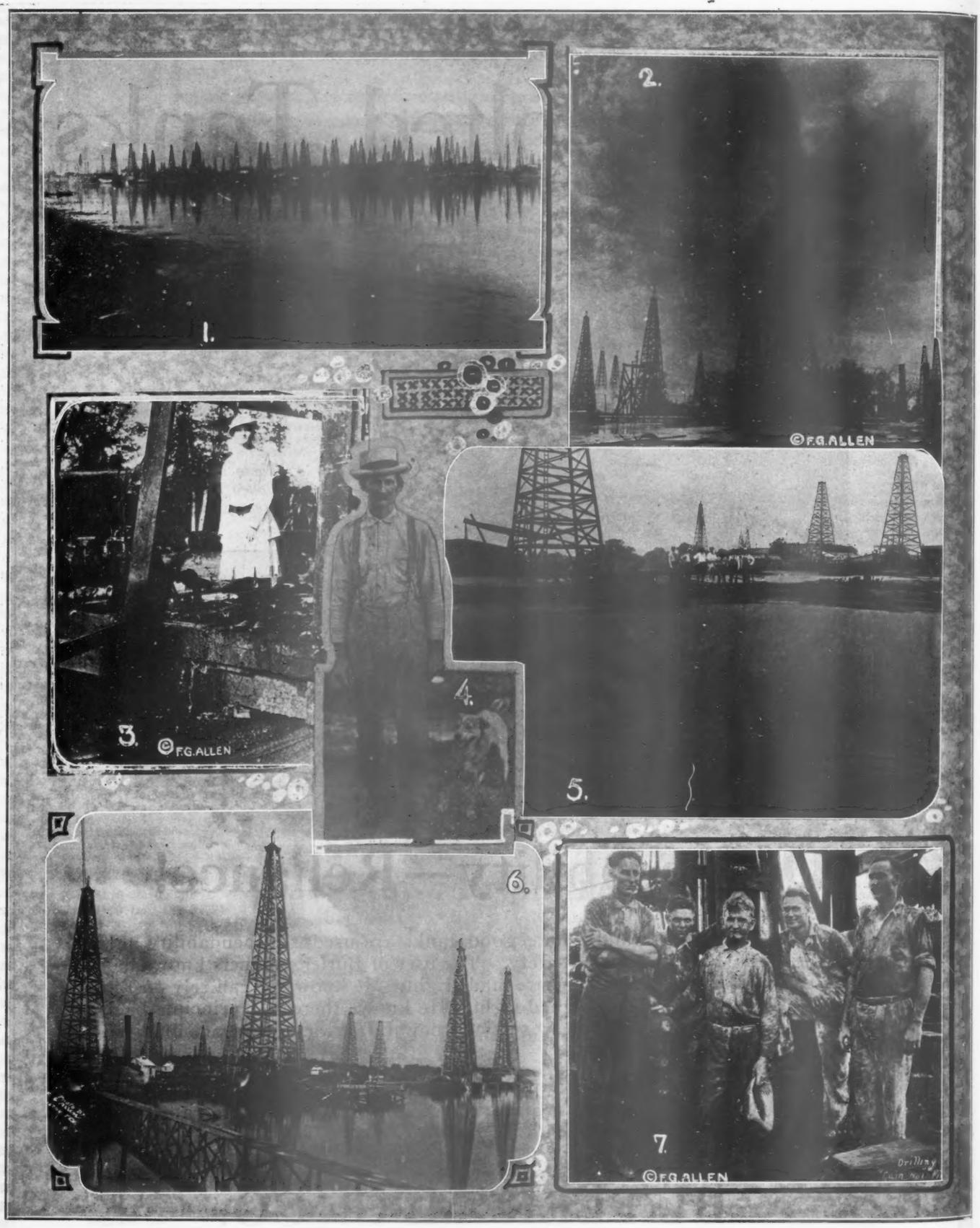


1—View of Goose Creek Pool in Texas showing wells along shore line of bay.
2—"Going over the top" in one of the pools along Gulf Coast in Texas.
3—Well of The Texas Co. at West Columbia, Texas, showing oil flowing.
4—John Gilliard, who received $1,000,000 bonus for his land at Goose Creek Pool, Texas, and millions more from royalties.
5—The Goose Creek Pool, Texas, one of the largest tide water fields in the world.
6—Drilling in the bay at Goose Creek, Texas.
7—Discovery well at Pierce Junction, Texas, brought in by Snowden and McSweeney.

"My Bank" for Oil Field Service

Says the Mid-Continent Oil Operator

Out in the far reaches of Jack Oak and Sand Hill, the Vanguard of the oil industry pushes its field forces. A discovery well has changed a sleepy valley into a seething center of activity. Men and mules; trucks and tractors; casing and cable are rushed into the fray. Fortunes are at stake. Leases are bought and sold over a pine box. Money is the motive force—it talks the language of the oil fields. In a majority of cases the Mid-Continent Oil Operator's line of communication runs back to the financial headquarters of the oil fields. What is true of the field force is true of every phase of the industry. This is why most of the Mid-Continent operators refer to the Exchange National as "My Bank."

"My Bank" for Oil Field Advice

Says the Eastern Financier or Shipper

In the polished interior of a sumptuous office, sits an official of a Pittsburgh steel mill. A telegram on his desk from a western producer asks quotations for a hundred thousand dollars worth of casing for shipment by fast freight. The steel mill needs the order, yet the producer is unknown to the mill. Is the producer good for the payment for so large an order? Instantly summoning stenographer; messenger boy ready for a mad dash; the wire is dispatched to the Credit Department of the Exchange Banks of Tulsa. Within an hour, the information requested will be on the Steel Mill President's desk; for the Mid-Continent Sales department of the Mill is a depositor of the Exchange Banks of Tulsa and its service is instantly available to all depositors who ship to or finance the oil industry.

DIRECTORATE

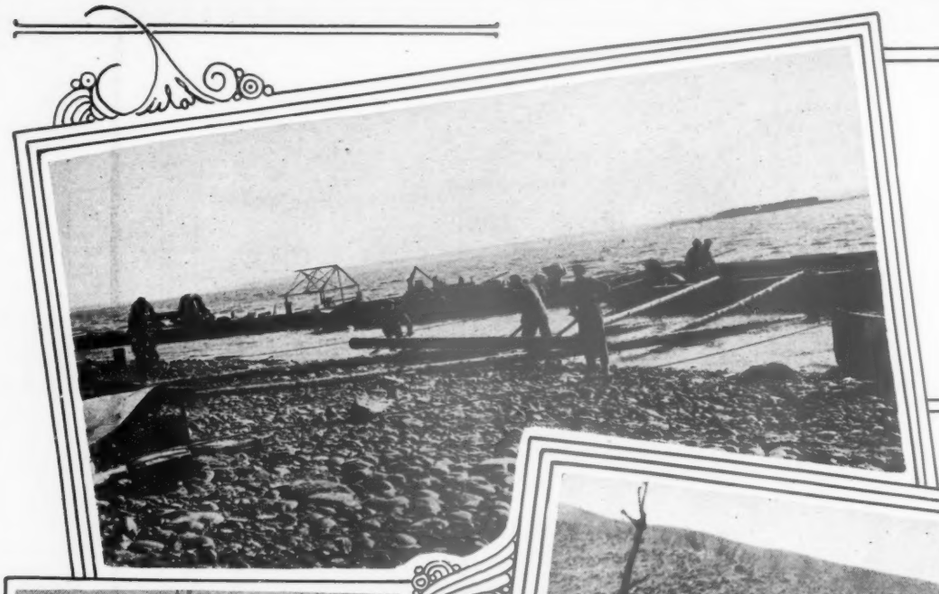
E. W. Sinclair, W. A. Brownlee, J. A. Chapman, J. H. Evans, Frank Haskell, A. T. Allison, H. H. Rogers, J. A. Hull, H. G. Barnard, R. P. Brewer, Jno. Y. Murry, R. M. McFarlin, J. J. McGraw, J. H. Markham, Jr., J. J. Larkin, D. H. Kelsey, H. F. Sinclair

EXCHANGE BANKS OF TULSA

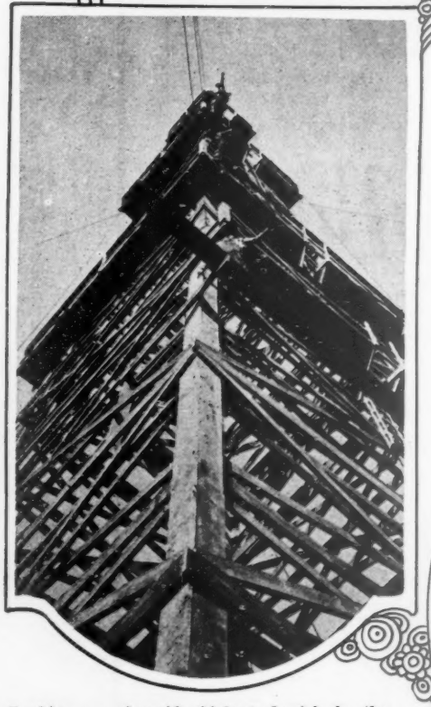
The Exchange National Bank — Exchange Trust Company

Combined Resources Exceed Forty Million Dollars

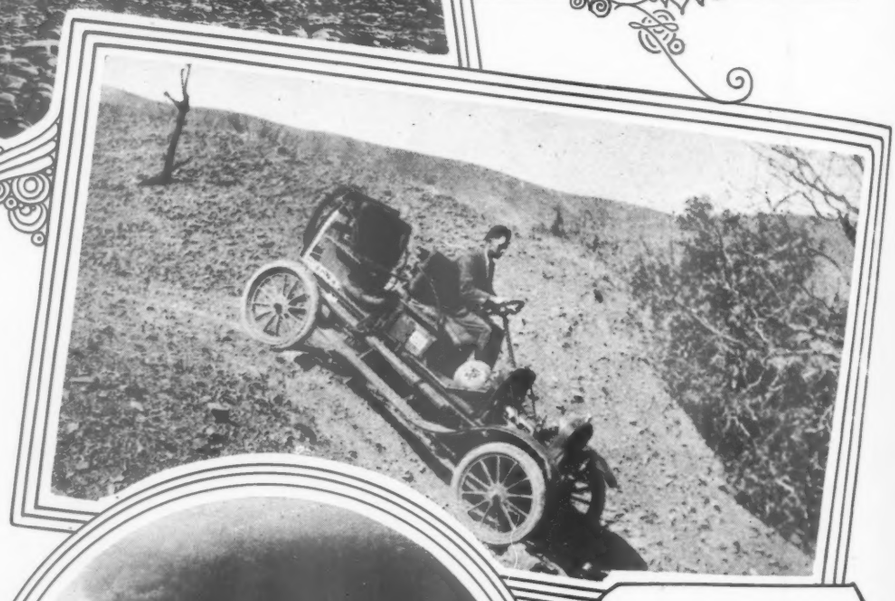
8-23



Unloading scows at site of discovery well at Fort Norman, Canada. (C)



Looking up alongside highest derrick in the world in California field.
—P. & A. Photo

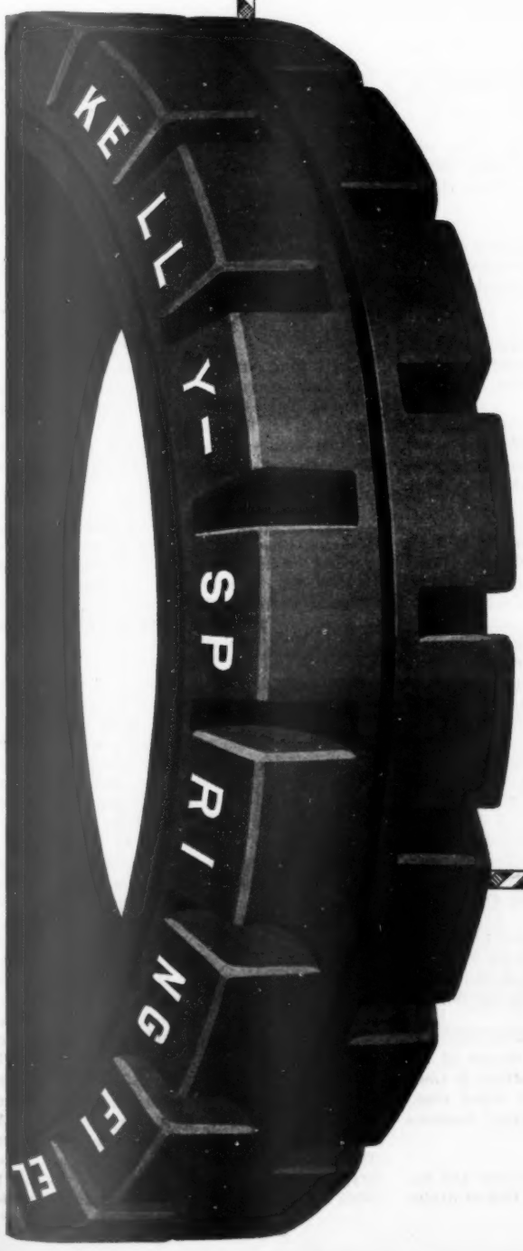


International Petroleum, Ltd., employe negotiating a Peruvian "Quebrada." (C)

Not an approaching storm. Merely what happens when oil tanks catch fire. (C)

Winter quarters of the Imperial Oil, Ltd., at Fort Norman, Canada. (C)

Facts you ought to know about Kelly Kats



Kelly Kats are massive single-cushion tires especially designed to give maximum traction, resiliency and mileage on trucks of heavy and medium capacity.

Kelly Kats are able to get traction without chains on almost any kind or condition of road.

Kelly Kats can stand as much, if not more, punishment than solid rubber tires, yet they are far more resilient.

Kelly Kats deliver mileage which makes them economical.

It is because Kelly Kats possess these qualities that they have steadily grown in popularity until they are now used on hundreds of fleets and thousands of single trucks in all parts of the country and in practically every industry.

There are no Caterpillar tires but Kelly Kats

KELLY-SPRINGFIELD TIRE CO.
250 West 57th Street New York, N. Y.

MEN KNOWN IN OILDOM

Joseph H. McDermott

Very few men engaged in the oil and gas industry in the eastern States are better or more favorably known than Joseph H. McDermott. He has been in the producing business practically all of his business life, having operated in Pennsylvania, Ohio, Indiana and West Virginia. He also operated with George Wyvell and others in the Hogshooter Field of Oklahoma.

Mr. McDermott was born in Crawford County, Pennsylvania, July 28, 1871. In 1875, the family moved to Bradford, where he grew to manhood. In 1895, he went to Saxonburg, Butler County, Pennsylvania, and later to Washington and Mt. Morris, Pa., and a few years later to his present home in Morgantown, W. Va.

The father, Thomas McDermott, and three sons, Joseph H., S. N. and J. R., were at various times rig builders, tank builders, drillers, tool dressers and contractors. Later, Joseph H. McDermott became associated with his father in the production of oil and gas, operating all through West Virginia.

Aside from his activities in the oil and gas business, Mr. McDermott found time to take an active part in the political game in West Virginia. In 1904, he was elected to the State Senate on the Republican ticket and received a larger majority than any other man on the ticket. He was elected president of the senate, which in West Virginia carries with it the title of lieutenant governor. His tenure of office extended from 1904 to 1908, during the period when W. M. O. Dawson was Governor. He was also a presidential elector for William H. Taft from the State of West Virginia. Mr. McDermott has large undeveloped holdings in West Virginia.

PERSONAL PARAGRAPHS

Frank Haskell of New York, president of the Tidal Oil Company, has been visiting in Tulsa.

* * *

J. S. Halyburton of the Halyburton Valve Company, of Berwick, Pa., was in Tulsa last week.

* * *

S. L. Cronin of the land department of the Pure Oil Company, Tulsa, is in Mexia, Tex., on business.

* * *

Oscar L. Thomas, district manager of the National Supply Company, in the Rocky Mountain region, is looking after the company's interest in southern Wyoming.

C. M. Lamason of Tulsa, sales manager of the Pure Oil Company, is recovering from an attack of influenza.

* * *

C. L. Skidmore, formerly manager of the Sun Oil Company, of Flint, Mich., is now with the Arrow Oil Co. of Lansing, Mich.

* * *

Sam Handler, head of the Beggs Oil & Gas Company, has returned to Okmulgee, Okla., from Chicago and Battle Creek, Mich.

* * *

Charles E. Markey, sales representative of the Link-Belt Company of Indianapolis, is making a trip through the Mid-Continent territory.

* * *

J. G. Pattus of Tulsa, secretary of the Flesher Petroleum Company, has returned from a month's trip to Los Angeles and Long Beach, Calif.

* * *

John W. Chalfant of Pittsburgh, Pa., is in Tulsa on business connected with the estate of the late Glen T. Braden, inventor and oil producer.

* * *

E. O. Fuller of Laramie, Wyo., who has charge of the oil and gas investigation on lands of the State University of Wyoming, was in Casper last week.

* * *

John M. Wilson, vice president of the National Supply Company of Pittsburgh, Pa., spent several days in the Tulsa office of the company this week.

* * *

W. H. Wotherspoon, field engineer for the Trimont Manufacturing Company, of Roxbury, Mass., is making a trip through the Rocky Mountain region.

* * *

A. E. Summers, a geologist of Enid, Okla., who is drilling several wells in connection with the Atlantic Oil Producing Company, was a Tulsa visitor last week.

* * *

Chester H. Westfall, manager in Mexico for the Marland Refining Company, with headquarters in the City of Mexico, has returned to Oklahoma for a few weeks' visit.

* * *

Ralph Stineman, with the Sinclair Crude Oil Purchasing Company, has been transferred from Wichita Falls, Tex., to the Holdenville, Okla., office of the company.

* * *

Leland V. Stanford, vice president of the Sinclair Refining Company, is inspecting the company's properties in the Gulf Coast region and will visit north Texas and Oklahoma.

* * *

W. F. Kennedy, independent operator in the Gulf Coast region, is scouting the Lake Charles (La.) territory, where the Vacuum Oil Company is making its initial wildcat test.

* * *

A. B. Crowell of the Crowell Packer Company, Casper, Wyo., and Lew Sontag have returned from a three weeks' hunting and fishing trip to the Flathead country and Salmon Lake, in Montana.

* * *

Patrick McAndrews, president of the Midwest Belting & Rubber Company, and Fred G. Love and Robert McAndrews of Tulsa attended a convention of tire and rubber men in Kansas City recently.

* * *

O .B. Seyster, formerly of the public relations department of the gas division of the Empire companies, has been made manager of the gas distribution office of the Empire in Arkansas City, Kans.

* * *

O. B. Maples, superintendent for the Lone Star Oil & Refining Company at Wichita Falls, Tex., has resigned his position and has been appointed superintendent of the Lion Oil Company at El Dorado, Ark.

* * *

John Geismar, assistant general manager of the National Supply Company of Toledo, Ohio, is touring the Mid-Continent territory with other members of the National force and studying business conditions.

* * *

J. W. Steele, assistant deputy supervisor and petroleum engineer of the Casper offices, United States Bureau of Mines, has returned from an automobile trip through northwestern New Mexico and southeastern Utah.

* * *

Henry S. Rade, formerly with the Arkansas Natural Gas Company, at Shreveport, La., has joined the geological staff of the Rycade Oil Company, a subsidiary of the Amerada Petroleum Corporation, with Houston as headquarters.

* * *

J. A. Warren of Denver, secretary of the Kinney-Coastal Oil Company, was in Casper, Wyo., last week. H. T. Severns, who was in charge of the Casper offices of the company until recently, is leaving for California. He will be succeeded by H. W. Conley.

* * *

J. C. McCue, assistant manager of production for The Texas Company, with offices in Fort Worth, Tex., has returned from a business and pleasure trip to the Gulf Coast and Laredo Fields. He made the trip by automobile and was accompanied by Mrs. McCue.

* * *

Fay Connor, director of the Oil and Gas Bureau of the corporation commission, State of Oklahoma, is making a tour of the Sayre oil and gas field, accompanied by John P. Adams of Lawton, Okla., district conservation officer. He is studying well logs and gathering data relating to oil and gas production.

* * *

Erwin W. Smith, well known driller in the Gulf Coast pools, has returned to Houston from San Domingo, where he drilled three tests for the Interocean Oil Company, in the Azua district. They were put down by diamond drills to 3,000 feet and were dry. The company is now drilling a test in Spain.

* * *

A. H. Wagner, general superintendent of the Western Petroleum Exploration Company, has been transferred from the Kevin-Sunburst Field in northern Montana to the company's offices at Leeco, Ky. During the past season, Mr. Wagner drilled 12 wells in the Kevin-Sunburst Field, 10 of which were oil producers.

* * *

J. H. Hudson and Henry G. Hudson, rotary drilling contractors of Tonkawa and Ardmore, Okla., were in Tulsa last week on business for their company. J. H. Hudson is one of the most recent operators from Ardmore. Henry Hudson arrived in Tulsa from Perry, Okla., with Carl Ragsdale, secretary of the company.

* * *

The following employes of the Panhandle Oil & Refining Company are moving with the company's general offices from Dallas to Wichita Falls, Tex.: Homer F. Bennett, L. C. Wright, Roy B. Jones, Thomas Morrisey, R. C. Stanford, M. A. Chamberlain, H. E. Cabiness, J. D. Anderson, G. W. Reed and W. E. Campbell.

* * *

Mr. and Mrs. C. Bert Sage of Toledo, Ohio, motored through to Cincinnati to attend the Latonia races recently. Mr. Sage is an old time Trenton rock oil operator, and spent a number of years in the Bradford (Pa.) Field. Many of the oil operators from Kentucky, Ohio, Indiana, Illinois, and from most oil fields east of the Rocky Mountains, were on hand to see the races.

* * *

William Groundwater, for years a prominent California pipe line superintendent, has been appointed manager of transportation for the Union Oil Company of California, according to an announcement given out by C. W. Ralph, director of sales and transportation for the company. Mr. Groundwater, who takes the place of Max H. Dyer, resigned, has been associated with the Union Oil Company since 1919, starting at the bottom. In 1916, he was made superintendent of the Producers Transportation Company, replacing E. W. Clark, now executive vice president of the Union Oil Company. In 1922, Groundwater was appointed assistant manager of transportation with headquarters in Los Angeles. As manager of transportation, he has responsibility for one of the largest pipe line systems in the country, as well as a fleet of 22 oil barges and tankers with a carrying capacity of 1,000,000 barrels.

A TYPICAL "P&R" LEASE

Betsy Foster, Wewoka—5300 Bbls. Daily

"P & R's" first well in the Wewoka District, Oklahoma, was brought in July 7th of this year with 2,400 bbls. initial production. The second well came in August 28th with 2,600 bbls., the third September 10th with 3,082 bbls. Three more wells are drilling.

This production so exceeded expectations that earthen storage is still in use, though steel tankage is being rapidly erected.

A "P & R" pipe line is delivering 5,300 barrels of crude daily from Wewoka to our West Tulsa refinery. This line's capacity is now being doubled.

Our three refineries, at West Tulsa, Blackwell, and Parco, Wyo., are now operating exclusively on "P & R" crude delivered in "P & R" pipe lines. After refining, delivery is made in our own tank cars, insuring the buyer's receipt of genuine high grade PARCO products. Let our nearest sales office quote on your gasoline, kerosene, distillate and fuel oil requirements.

PRODUCERS & REFINERS CORPORATION

Denver Chicago Tulsa
Casper Salt Lake City Parco

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PARCO

Oil Consumption Increased in September

Ordinarily, Substantial Decrease is Shown at this Time. Refinery Stocks Decrease; Those of Pipe Lines Greater.

By C. O. Willson

The outstanding development in the oil business during September as shown by complete data for the month obtained from the government and The Oil and Gas Journal reports was the large total consumption, including practically all the refined products. This heavy consumption obtained in spite of the fact that a substantial decrease in consumption is a seasonable development to be expected in September as is shown by a comparison with other years.

Total consumption for September, with 30 days, was only 35,289 barrels less than the August total of 31 days. This means that the daily average consumption for September was greater than in August. The importance of this heavy consumption, coming at a time when the industry has been confronted with an overproduction for several months, is highly important. If the remaining fall and winter months maintain the same rate of increase over corresponding months of previous years, it will aid greatly in bringing about the desired equilibrium between supply and demand necessary to bring the markets out of their present low price levels. September was a favorable month from a weather standpoint and this accounts in large measure for the heavy consumption of certain refined products. Although a normal increase in crude consumption over last year is to be expected for the next six months an exceptional increase such as was experienced in September is improbable unless comparably favorable weather continues.

CRUDE OIL MARKET—(Barrels)

	September	August	Increase
Total all stocks (Oct. 1)	456,331,726	450,458,631	5,873,097
Pipe line stocks, gross (Oct. 1)	320,804,000	311,398,100	9,406,000
Importers crude stock, not at refineries (Oct. 1)	752,000	891,000	*139,000
Total refinery stocks (Oct. 1)	134,775,726	138,169,631	*3,393,903
Production and imports	71,727,828	74,042,303	*2,314,475
Runs to stills	49,901,934	52,331,158	*2,429,224
Total consumption, includes exports	65,822,438	65,857,727	*35,289

*Decrease Note—The dotted line of the accompanying graph includes 14,881,000 barrels representing Mexican stocks in the hands of refiners which was dropped in January report of the Geological Survey; 4,029,000 barrels were also dropped by a Mid-Continent company's pipe line and tank farm stocks on account of a reclassification. In September 2,724,000 barrels previously recorded as pipe line stocks in California were changed to refinery stocks. In making comparisons with January and previous months the dotted line should be used for total all stocks and pipe line stocks. For other comparisons the heavy lines should be used.

REFINERY MARKET—(Gallons)

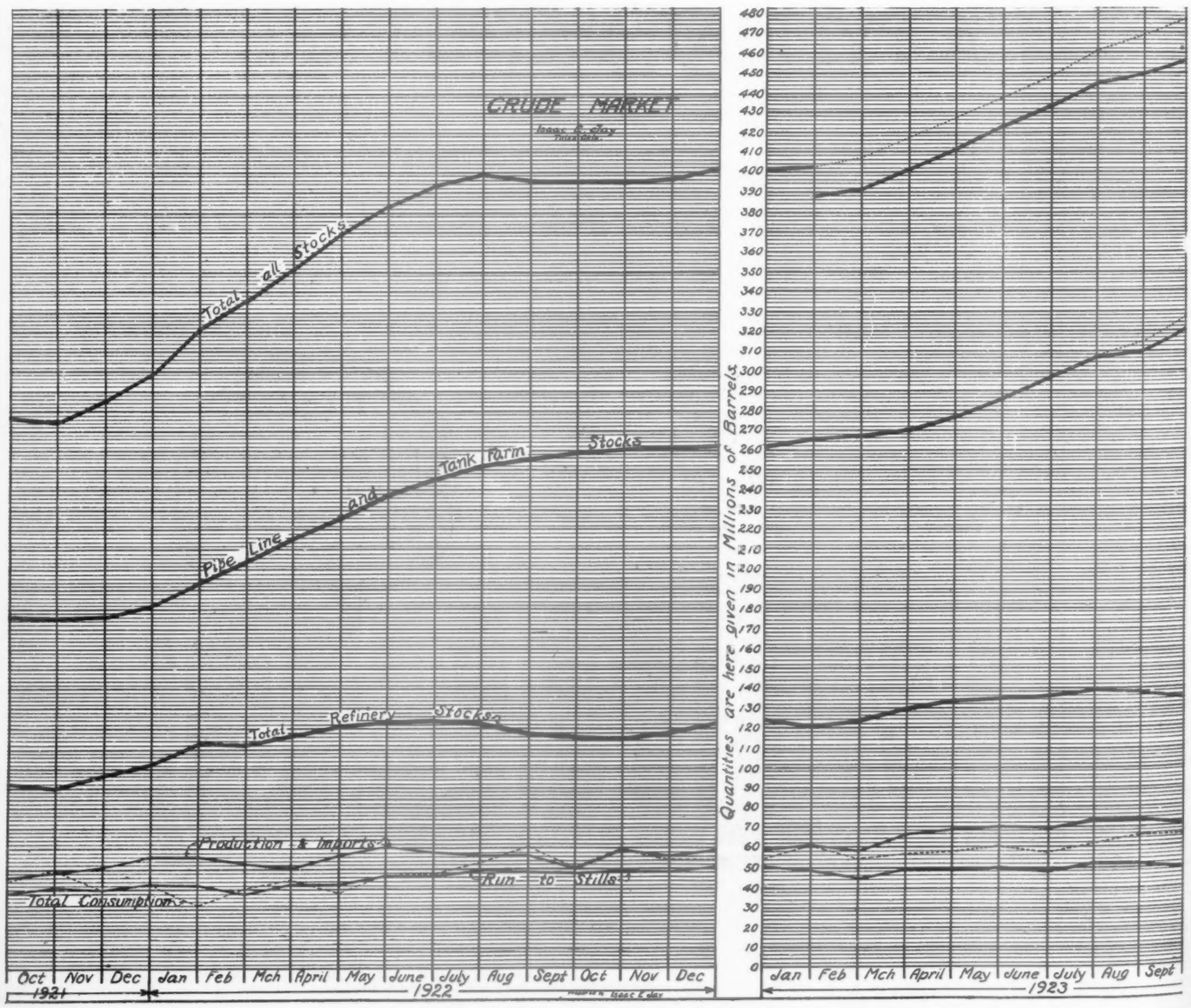
	September	August	Increase
Fuel oil consumption, includes exports	1,042,540,815	960,319,639	82,221,176
Gasoline consumption, includes exports	731,034,872	770,689,085	*39,654,213
Kerosene consumption, includes exports	199,281,227	212,114,269	*12,833,042
Fuel oil production and imports	1,061,562,679	1,021,687,978	39,874,701
Gasoline production and imports	649,873,483	659,155,966	9,282,483
Kerosene production and imports	193,687,683	186,271,978	7,415,705
Fuel oil stocks (Oct. 1)	1,481,203,993	1,462,182,129	19,021,864
Gasoline stocks (Oct. 1)	972,694,832	1,053,856,221	*81,161,389
Kerosene stocks (Oct. 1)	238,024,012	243,617,556	*5,593,544

*Decrease.

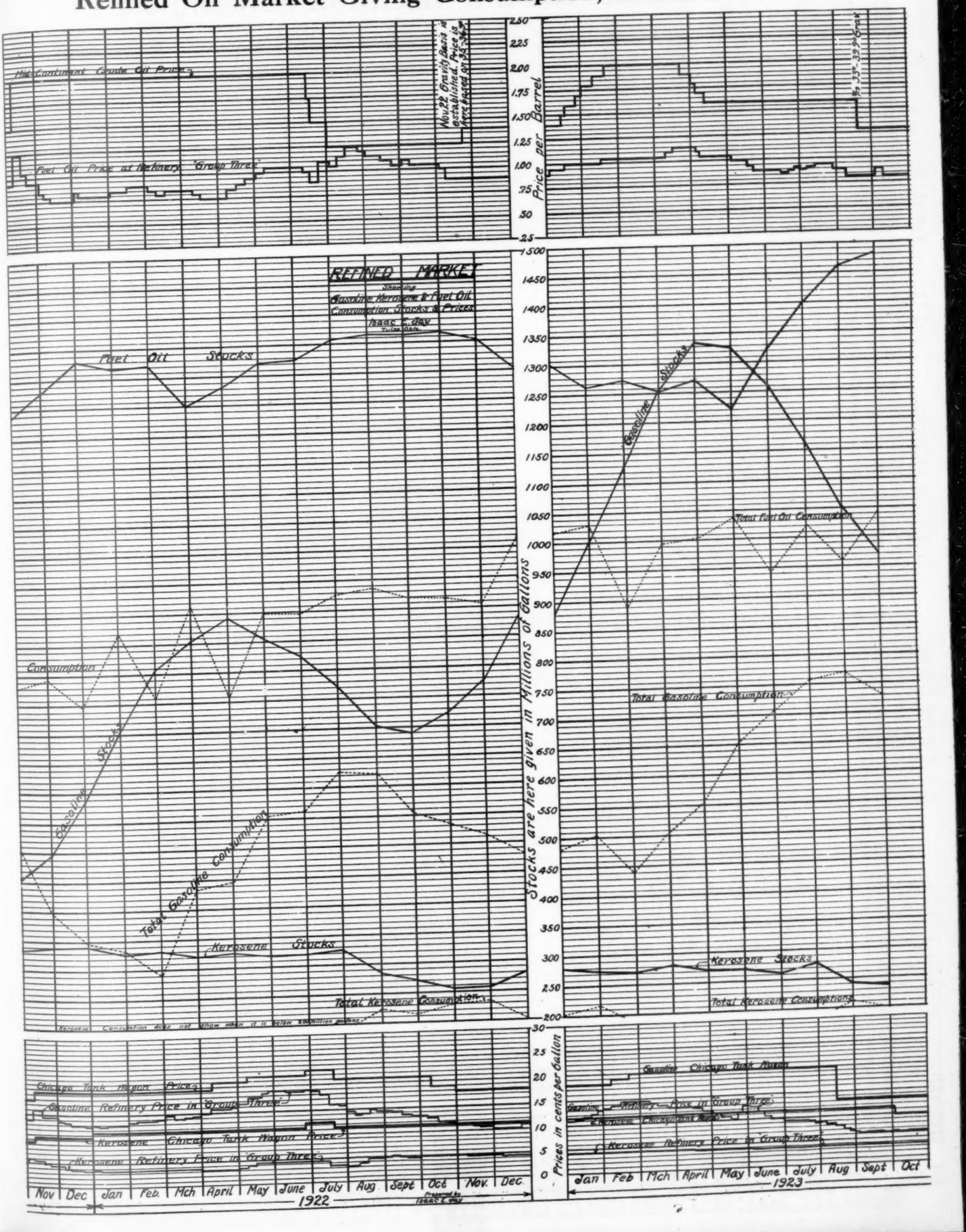
Crude Output High

It is apparent, however, that with the heaviest consumption possible there is little likelihood of consumption exceeding production for a few months, at least, and past history indicates that markets, after a period of overproduction, do not

(Continued on Page 76)


CRUDE MARKET
Total all Stocks
Pipe Line and Tank Farm Stocks
Total Refinery Stocks
Production & Imports
Run to Stills
Total Consumption
Quantities are here given in Millions of Barrels
Oct Nov Dec Jan Feb Mch April May June July Aug Sept Oct Nov Dec
1921
1922
Jan Feb Mch April May June July Aug Sept
1923

Refined Oil Market Giving Consumption, Stocks and Prices


Mid-Continent Crude Oil Price
Fuel Oil Price at Refinery Group Three
Nov. 22 Gravity Basis is established. Price is here based on 35.3°
Price per Barrel
REFINED MARKET
Showing
Gasoline Kerosene & Fuel Oil
Consumption Stocks & Prices
Issued Every
Fuel Oil Stocks
Consumption
Gasoline Stocks
Total Gasoline Consumption
Kerosene Stocks
Total Kerosene Consumption
Stocks are here given in Millions of Gallons
Gasoline Stocks
Total Fuel Oil Consumption
Total Gasoline Consumption
Kerosene Stocks
Total Kerosene Consumption
Chicago Tank Wagon Price
Gasoline Refinery Price in Group Three
Kerosene Chicago Tank Wagon Price
Kerosene Refinery Price in Group Three
Prices in cents per Gallon
Nov Dec Jan Feb Mch April May June July Aug Sept Oct Nov Dec
1922
Jan Feb Mch April May June July Aug Sept Oct
1923

Refinery Statistics for the Month of September, 1923

Compiled by W. C. Hill, Petroleum Economist

For September a further decrease is noted in the number of operating refineries reported to the Bureau of Mines, there being 250 plants running to stills a daily average of 1,627,083 barrels of crude oil. This shows operations at 79 per cent of their aggregate daily indicated crude oil capacity of 2,059,632 barrels.

During September both the export and domestic demand for gasoline decreased slightly, the total demand being at the daily rate of 24,367,829 gallons as compared with 24,860,938 gallons during August. Gasoline production in September was 623,732,834 gallons while domestic demand (indicated consumption) was 655,387,616 gallons. The total demand exceeded the new supply (production plus imports) by 81,161,389 gallons, this amount being withdrawn from storage. The new supply in September of this year was 20 per cent greater than last year and the total demand in September, 1923, was 32 per cent greater than in September, 1922. Stocks on hand at refineries September 30 were 972,694,832 gallons, which at the current rate of demand, constitutes 40 days' supply as compared with 37 days' supply a year ago at this date. This shows a surplus of only 8 per cent over the normal gasoline supply for the entire country at this date for the past seven years. These figures indicate that the situation has improved considerably since May and June; however, the situation does not yet warrant increased refining operations.

Kerosene—Kerosene output during September was 193,687,612 gallons, a slight increase over the August figure, while the indicated consumption decreased by about 14,000,000 gallons, amounting to 117,532,944 gallons. About 5,600,000 gallons were withdrawn from storage, the stocks on hand at refineries September 30 being 238,024,012 gallons.

Gas and Fuel Oils—The September production of gas and fuel oils again increased, amounting to 1,032,590,585 gallons. Demand also showed a marked increase during the month. The domestic demand was 923,994,153 gallons and for export 118,546,662 gallons. Stocks increased to 1,481,203,993 gallons.

Lubricants—Lubricants held about the same as in August, the demand exceeding the supply by about 5,400,000 gallons, reducing stocks to 215,013,179 gallons. Production was 87,172,230 gallons while the demand for domestic use was 61,377,321 gallons and for shipment abroad was 31,207,245 gallons.

(Unit of Gallons)

	Sept., 1923	Aug., 1923	Sept., 1922
Gasoline—			
Stocks first of month	1,053,856,221	1,165,389,340	703,738,310
Production	623,732,834	648,954,706	536,491,588
*Imports	26,140,649	10,201,260	4,563,316
*Exports	75,647,256	78,503,475	46,808,277
Indicated consumption	655,387,616	692,185 610	507,934,527
Stocks end of month	972,694,832	1,053,856,221	690,050,809
Kerosene—			
Stocks first of month	243,617,556	269,459,847	285,520,131
Production	193 687,612	186,218,819	197,935,102
*Imports	71	53,159	†.....
*Exports	81,748,283	80,226,306	72,114,973
Indicated consumption	117,532,944	131,887,963	140,763,386
Stocks end of month	238,024,012	243,617,556	270,576,864
Gas and Fuel Oil—			
Stocks first of month	1 462,182,129	1,400,813,790	1,366,611,611
Production	1,032,590,585	1,010,657,879	917,857,786
*Imports	28,972,094	11,030,099	†.....
*‡Exports	118,546,662	127,414,605	74,823,025
Indicated consumption	923,994 153	832,906,034	844,689,207
Stocks end of month	1,481,203,993	1,462,182,129	1,364,957,165
Lubricants—			
Stocks first of month	220,419,457	224,951,955	220,668,498
Production	87,172,230	87,261 902	82,056,712
*Imports	6,058	6,355	†.....
*Exports	31,207,245	22,530,546	28,136,445
Indicated consumption	61,377,321	69,270,209	59,860,954
Stocks end of month	215,013,179	220 419,457	214,727,811

*From Bureau of Foreign and Domestic Commerce. Exports include shipments to noncontiguous territories. †Figures not compiled prior to October, 1923. *‡Does not include fuel or bunker oil laden on vessels engaged in foreign trade.

OUTPUT OF REFINERIES IN THE UNITED STATES DURING SEPTEMBER, 1923

	East Coast (N. Y., Phila. and Bato)	Pennsylvania N. Y. E. Ohio and W. Va.	Ind. and Ill., W Ohio, Ky. and Tenn.	Oklahoma and Kansas	Texas	Louisiana and Arkansas	Colorado and Wyoming	California	Total	Daily Average 1923	Daily Average 1922
Oil run to stills, bbls.:											
Domestic crude	8,964,754	1,611,065	4,015,284	4,670,198	6,829,239	3,528,483	2,376,513	13,382,560	45,378,096	1,512,603	*.....
Foreign crude	1,754,87	.....	.....	.....	1,032,920	646,587	.....	.....	3,434,384	114,479	*.....
Total crude oils	10,719,631	1,611,065	4,015,284	4,670,198	7,862.159	4 175,070	2,376,513	13,382,560	48,812,480	1,627,083	1,417,817
†Domestic partly refined	288,930	124,904	104,081	.....	628,647	.....	604,865	.....	62,416	2,081	*.....
Foreign partly refined	620,577	.....	.....	.....	7,854	17,215	.....	.....	645,646	21,523	*.....
Casinghead gasoline	31,778	9,358	191	80,264	96,408	28 882	50,026	.....	381,392	12,713	*.....
†Total others oils	941,285	134,262	104,272	80,264	732,909	46,097	654,891	84,485	1,089,454	36,315	185,306
†Total oils run	11,660,916	1,745,327	4,119,556	4,750,462	8,595,068	4,221,167	3,031,404	13,467,045	49,901,934	1,663,398	1,603,123
Output of refineries:											
Gasoline, gallons	137,659,103	25,641,885	82,771,721	76,843,255	102 965,825	39,707,191	54,525,249	103,618,605	623,732,834	20,791,094	17,883,066
Kerosene, gallons	47,630,415	12,573,732	20,599,280	20,268,883	37.636,806	25,313,485	12,368 452	17,296,559	193,687,612	6,456,253	6,597,831
Gas and fuel, gallons	225,423,587	13,540.560	46.433,261	79,873,685	176,178 835	71,561,064	53,236,137	366,343,456	1,032,590,585	34,419,686	30,595,260
Lubricants, gallons	27,497,290	12,714,945	7,474,365	5,071,003	22 085,627	2,403,956	1,250 465	8,674,579	87,172,230	2,905,741	2,735,224
Wax, pounds	15,092,058	5,629,697	2,769,710	3,499,772	3,382 618	3,531,936	639,685	103,729	34,649,205	1,541,974	1,031,462
Coke, tons	14,055	1,410	16,500	4,265	9,403	6,975	6,449	.....	59,057	1,969	1,846
Asphalt, tons	105,200	412	11,043	.....	26.074	38.116	2,502	43,561	226,908	7,564	7,262
Other finished products, gals.	4,903,248	1,322,823	3,262,878	1,100,409	21,593	4,094,130	.....	5,485,939	20,191,020	673,034	*.....
Losses, bbls.	406,892	147,258	120,930	214,068	330,617	78,988	61,313	210,789	1,590,853	53,028	60,188
‡Domestic refined products, gallons	.....	.....	.....	5,625,972	.....	20,145,895	.....	45,166,595	.....	.....	*.....

*Not available prior to 1923. †Net runs to stills. ‡Net production.

STOCKS AT REFINERIES IN THE UNITED STATES SEPTEMBER 30, 1923

	East Coast (N. Y., Phila. and Balto.)	Pennsylvania, N. Y., E. Ohio and W. Va.	Ind. and Ill., W. Ohio, Ky. and Tenn.	Oklahoma and Kansas	Texas	Louisiana and Arkansas	Colorado and Wyoming	California	Total Stocks Sept. 30 1923	Total Stocks Sept. 30 1922
Crude oil and partly refined products, bbls.:										
Domestic crude	6,038,745	1,378,565	1,185,282	4,537,420	4 663,525	3,705,556	610,153	6,409,185	28,528,431	*.....
Foreign crude	2,573,382	.....	.....	.....	258,747	1,392,888	.....	.....	4,225,017	*.....
Total crude oils	8,612,127	1,378,565	1,185,282	4.537,420	4,922,272	5,098,444	610,153	6,409,185	32,753,448	33,615,478
Domestic partly refined	5,203,356	773,963	2,173,593	1,807,618	5,383,829	2,587,162	1,714,875	10,888,211	30,532,607	*.....
Foreign partly refined	114,186	.....	.....	.....	68	.....	.....	.....	114,254	*.....
Total other oils	5,317,542	773,963	2,173,593	1.807,618	5,383,897	2,587.162	1,714,875	19,888,211	30,646,861	1,394,389
Total oils to be run	13,929,669	2,152,528	3,358,875	6,345,038	10,306,169	7,685,606	2,325,028	17,297,396	63,400,309	35,019,847
Finished products:										
Gasoline, gallons	196,302,748	18,529,393	116,506 816	176,813,335	115,463,619	93,633,810	111 355,985	144,099,126	972,704,832	690,050,809
Kerosene, gallons	63,333,185	12,224,559	45,833,067	17,019,474	37,870,372	29,150,900	4,888,633	27,703,822	238,024,012	270,576,864
Gas and fuel oils, gallons	331,400,535	32,389 866	38,606,812	94,305,138	346,140,634	84,582 197	42,059,390	511,220,421	1,481,205,993	1,364,957,165
Lubricants, gallons	90,626,430	29,461,332	17,973,314	9,463,128	47,053,662	2,916,650	5,109,313	12,409,350	215,013,179	214,727,811
Wax, pounds	56,995,179	17,678,488	28,618 433	3,969,316	11,560,953	52,197,140	934 294	252,081	172,205,884	214,682,235
Coke, tons	6,578	.....	925	5,072	4,367	6,688	406	3,548	27,584	36,913
Asphalt, tons	60,387	2,317	8,301	188	18,272	11,721	2,031	15,441	118,658	124,533
All other finished products, gallons	6,050,158	897,576	14,611,796	5,267,314	78,936	1,537,362	886,668	220,433	29 550,242	*.....

*Data not available prior prior to 1923.

WORLD OIL BURNERS*

(500 gross tons and over)

Flag—	JUNE 30, 1920 Steam Engine No.	Steam Engine Gross tonnage	Oil Engine No.	Oil Engine Gross tonnage	Total No.	Total Gross tonnage	JUNE 30, 1921 Steam Engine No.	Steam Engine Gross tonnage	Oil Engine No.	Oil Engine Gross tonnage	Total No.	Total Gross tonnage	JUNE 30, 1922 Steam Engine No.	Steam Engine Gross tonnage	Oil Engine No.	Oil Engine Gross tonnage	Total No.	Total Gross tonnage
†American	1,251	5,923,767	75	135,506	1,326	6,059,273	1,677	8,310,875	76	148,420	1,753	8,459 295	1,720	8,710,935	70	146,152	1,790	8,857,087
Argentine	3	6,017	4	3,664	7	9,681	4	9,962	4	3,818	8	13,780	4	9,962	6	6,989	10	16,951
Belgian	3	9,242	2	4,223	5	13,465	6	25,383	2	4.223	8	29,606	7	27,300	1	2,144	8	29,444
Brazilian	1	3,822	1	1,480	2	5,302	1	3,822	5	6,999	6	10,821	1	3,822	4	5,401	5	9,223
British	282	1,664,631	53	157,813	335	1,822,444	436	2,546,476	72	279 567	508	2,826,042	530	3,143.816	71	316,612	601	3,460,428
Chilean	....	.....	....	.....	....	.....	....	.....	1	1,919	1	1,919	1	7,000	2	2,500	3	9,500
Chinese	....	.....	2	1,385	2	1,385	1	510	3	2,998	4	3,508	1	510	3	2,998	4	3,508
Cuban	2	3,244	....	.....	2	3,244	3	4,533	1	1,111	4	5,644	3	4,533	1	1,111	4	5,644
Danish	3	4,976	21	98,102	24	103,078	6	22,755	26	130,316	32	153,071	11	37,671	31	145,727	42	183,398
Danzig	2	17,600	1	9,932	3	27,532	3	26 907	2	12,078	5	38,985	3	26,907	3	13,371	6	40,278
Dutch	74	221,258	18	29,202	92	350,460	103	402,704	21	33,726	124	436,430	128	533,349	25	59,229	153	592,578
Egyptian	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	4	5,991	4	5,991
Finnish	....	.....	....	.....	....	.....	3	2,008	3	2,008	....	.....	....	.....	3	1,991	3	1,991
French	14	60,738	7	13,098	21	73,836	41	204,516	10	17,768	51	222,284	47	226,599	10	19,162	57	245,761
German	....	.....	....	.....	....	.....	3	8,206	3	2,172	6	10,378	15	67,073	15	41.894	30	108,967
Greek	3	16,284	1	1,472	4	17,756	10	46,728	2	2,948	12	49,676	9	43,197	1	1,476	10	44,673
Honduran	....	.....	....	.....	....	.....	6	12,515	1	677	7	13,192	8	17,106	1	677	9	17,783
Italian	14	64 283	19	42,188	33	106,471	25	122,202	23	52,863	48	175,065	24	123,271	32	68,985	56	192 256
Japanese	4	33,930	3	3,146	7	37,076	14	98,039	5	6,021	19	104,060	29	202,381	4	5,171	33	207,552
Mexican	6	18,917	....	.....	6	18,917	6	18,917	....	.....	6	18,917	10	24,670	....	.....	10	24,670
Norwegian	46	231,102	51	107,635	97	338,737	92	434,353	61	116,989	153	551,342	104	511,096	71	157 723	175	668,819
Panaman	....	.....	....	.....	....	.....	....	.....	1	1,141	1	1,141	....	.....	1	1,141	1	1,141
Paraguayan	....	.....	....	.....	....	.....	....	.....	....	.....	....	.....	2	3,254	....	.....	2	3,254
Peruvian	5	17,812	1	1,584	6	19,396	5	17,611	1	1,584	6	19,196	5	17,611	1	1,584	6	19,195
Philippine	2	5,524	5	5,803	8	11,327	1	762	6	8,269	7	9,031	1	762	6	8,269	7	9,031
Portuguese	....	.....	....	.....	....	.....	....	.....	5	3 135	5	3,135	....	.....	2	2,085	2	2,085
Russian	3	5.979	1	1,090	4	7,069	2	3,038	1	1,090	3	4,128	2	3,038	1	1,090	3	4,128
Siamese	3	1,956	....	.....	3	1,956	2	1,203	....	.....	2	1,203	2	1,203	....	.....	2	1,203
Spanish	4	15,144	2	1,775	6	16,919	16	55,110	5	8.199	21	63,309	15	53,557	5	8,144	20	61,701
Swedish	3	16,189	21	72,578	24	88,767	8	31,012	32	107,774	40	138,786	9	30,512	38	135,881	47	166,393
Uruguayan	2	3,498	2	1,658	4	5,156	3	7,043	2	1,658	5	8,701	3	7,043	3	2,872	6	9,915
Total	1,731	8,345,913	290	693,334	2,021	9,039,247	2,474	12,415,181	374	959,471	2,848	13,374,652	2,694	13,838,178	416	1,166.370	3,110	15,004,548

*Exclusive of Army, Navy, Admiralty, and other Government oil burners. All figures, except for American vessels, are prepared from Lloyd's Register. †Including oil burners on Great Lakes.

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At the Petroleum Exposition we had forcibly brought home to us the care with which modern construction engineers are comparing the merits of competing equipment.

The many engineers who visited our exhibit we found thoroughly informed on our equipment. It was very gratifying to us to have these men point out to us the respects in which McDONALD Swing Joints, Vent Valves, Pumps and other equipment excel, and to be told time and again that these thoroughly posted experts specify McDONALD equipment exclusively for much of their refinery and bulk station construction work.

McDONALD equipment has been brought by long study and effort to where it approximates perfection, and engineers are recognizing this fact. Let us quote on your requirements.

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THE NATIONAL SU

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checking and cracking
fishing jobs.

SUPPLY COMPANIES

NATURAL GAS DEVELOPMENTS

Situation Relating To Oil and Gas Is Outlined by Hoover

By Harry J. Hoover

President Ohio Gas & Oil Men's Association

When we consider that practically all motor transportation, entering as it does into the individual life of a majority of our population is dependent upon one branch of our industry—namely, oil and gasoline—and that practically all the households within the border of our own State depend for one or more essential uses upon the other branch of our industry—natural gas—we may well give serious thought to the mutuality of interest that exists between the public we serve and ourselves. Notwithstanding this twofold interest, the public depending to such a tremendous extent upon the service of the gas and oil companies, and the companies depending for their earnings upon the great public, there still exists a considerable misunderstanding.

For the oil man the year 1923 has been filled with business nightmares. Owing to many unusual conditions, chief among which was overproduction caused by the development of great oil fields in California, Texas, and other western States, the price of oil products have fallen to ruinously low levels. This condition was somewhat accentuated by the desire of officials and politicians in some of the western States to capitalize the condition by attempting to have their States or cities enter the distributing gasoline business. It was apparent to anyone familiar with the economics of the oil business that all such transient semi-socialistic action will inevitably end in disaster to the promoters and that in the last analysis the consuming public will benefit in no degree whatever.

Be it said to the credit of the officials of the State of Ohio that no attempt was made by them to further demoralize an already serious business situation. The inevitable law of supply and demand will eventually correct the conditions that still exist in the oil business, but it is a problem that is taxing the stability and integrity of the industry.

More Uses for Oil

It might be well to call attention at this time to the development of oil using appliances and apparatus. During the past year or more many devices for the efficient and practical use of oil for heating—not only for industrial but for house heating—have been brought out. It seems quite possible for the popular interest already shown in such devices that a very considerable field for the use of some of the lower grades of fuel oil may be developed. The oil engine is cited as another mechanical development for the use of oil. The operating economies of which are well worth careful investigation. These oil using devices are mentioned because it would seem the part of good business for the oil companies to give active attention to all such development. It may open up entirely new channels for oil uses and, therefore, oil sales.

The situation of the natural gas business in Ohio presents a far different picture, and one that should be seen in the full light, not only by every gas man but by every user of natural gas in the State. The time is here when the problem of the future supply and use of natural gas in the State of Ohio must be met and solved, not by the producing and distributing companies, but by the users of gas themselves. It has reached the point

(Continued on Page 123)

NATURAL GAS EXPERT EXPLAINS INEFFICIENT USE OF HOUSE FUEL

The average use of fuel in the home is grossly inefficient. If correct methods were generally understood and applied throughout the country, the same heating service could be obtained with one-half of the fuel and there would result a saving of $2,000,000 a day. These are conclusions reached as a result of research by the United Staes Bureau of Mines in cooperation with other agencies and with other data assembled by Samuel S. Wyer, associate in mineral technology, of Smithsonian Institution, in an educational program of resource conservation.

Many principles are advanced for the guidance of the fuel user. For instance, combustion (that is, burning) of every fuel is the chemical combustion of the ingredients in the fuel with oxygen of the air. Different fuels require different quantities of air and applied in different ways. Efficient fuel use can be obtained only by the use of the correct amount of air and applied in the right way. As this is entirely in the hands of the fuel user, importance of correct information is obvious.

Imperfect Combustion

The burning of fuel with perfect combustion will produce carbon dioxide—the same substance that is exhaled from the lungs—and water vapor, continues Mr. Wyer's paper. If the combustion is not perfect, carbon monoxide—a poison—and considerable vapors and smoke will be formed. No heating device has or can be made that will absorb its combustion products, hence they must be properly removed from the house by adequate flues.

Even with proper combustion of fuel, the heating problem is only partially solved. The big task is getting the heat into the room, water or food that is to be heated in the most direct and effective manner. The ordinary furnace or water heater for the average house does not have enough heat absorbing surface, with the result that the combustion products go into the chimney at too high temperature and much heat is needlessly lost. This is especially marked when gas or oil are burned in the ordinary coal furnaces.

Water tanks, furnaces and pipes for hot air, water or steam should be adequately insulated. In many of the recent houses, especially those "built to sell" the construction is so defective that a reasonably tight room cannot be secured. Fuel savings of 15 to 25 per cent are easily possible by making the house tight.

Most houses are kept too warm. About 25 per cent of the house fuel is used in raising the room temperature from 60 per cent to 70 per cent. Houses can be kept 5 degrees to 10 degrees lower than is customary—that is, kept at 62 degrees to 68 degrees—without any discomfort or any danger to health. Keeping the house temperature lower is the easiest way to save fuel.

In most houses—especially when hot-air furnaces are used—the room air is too dry for health and comfort. That is the "moisture content" called humidity is too low. A room with proper humidity of air—not less than 30 per cent—will be more comfortable and healthful at a low temperature, than one where the moisture content is too low. Therefore, with proper humidity, lower temperatures may be comfortably maintained and less fuel used.

The humidifying equipment usually available is grossly inadequate. For instance, with zero temperature of intake air, to maintain 40 per cent of relative humidity, with the room temperature at 70 degrees F., for 9,000 cubic feet of air per hour—which would be proper for an average size house with a family of five—it would be necessary to evaporate about one-half gallon of water per hour.

Most hot air furnaces take their cold air only from the outside. This is wrong. When the basement is clean by merely taking the air out of the basement—at least in severe and windy weather— a saving of 20 per cent to 30 per cent can be made and the house kept more comfortable.

Natural gas is on the decline and the demand is greater than the available supply and should be used with care as manufactured gas must be used. It is worth twice any manufactured gas that can be made; therefore, two cubic feet of manufactured gas will be required to replace one cubic foot of natural gas. Candle power standards for manufactured gas are obsolete, of no value to the public and should be abandoned. Due to crude fuel and operating conditions, manufactured gas must rapidly go to a lower heating value standard so as to permit the use of fuels and processes not now available. In Pennsylvania, the beehive coke oven gas wasted four and one-half times the total amount of manufactured gas sold in the State.

SOUTHERN CARBON CO. MOVES TO MONROE, LA.

SHREVEPORT, La., Nov. 12.—Headquarters for Louisiana of the Southern Carbon Co. have been removed from Fairbanks, about 10 miles from Monroe to the latter city. This is one of the largest, if not the largest, gas and gas products interests, from the standpoint of volume of production, in the world. It has expended approximately $2,000,000 in completion of its plant at Fowler, La., with its pipe lines, and of other plants at Fairbanks, Spyker, Perryville and Swartz. It owns in the neighborhood of 50 producing wells and has recently acquired the holdings of the Ladell interests, all of which have already been connected through extensive pipe lines to assure gas for the operation of its various carbon and gasoline plants and for its commercial pipe line recently completed, and over 100 miles in length, for the purpose of supplying gas for Alexandria and its environs.

NEW SURVEY AT ARDMORE

ARDMORE, Okla., Nov. 10.—The arrival of W. D. Miser, of Washington, D. C., member of the United States Geological Survey, is creating considerable interest in local geological circles, and Mr. Miser is finding himself accompanied by other geologists of Ardmore during his expeditions into the local areas. Mr. Miser is here to determine the nature of the Glen formation south of the Arbuckles in the north Ardmore area and around the Criner Hills, southeast of Ardmore. It appears that two other geological parties which reported to the Government on the territory concerned rendered different opinions and Mr. Miser is in Ardmore to make final decision.

NATURAL GAS NEWS FROM ONTARIO FIELD

CHATHAM, Ont., Nov. 10.—In the Ontario Fields, the Northern Pipe Line, originally laid at the time of the Tilbury boom and later taken over by the Union Natural Gas Co., has been removed, and customers are now receiving fas from the Sarnia pipe line. A branch line has been extended from the Sarnia line and a lateral feed main laid down for the purpose of caring for former Northern Pipe Line consumers in Dover Township. Under the new management, the Dover consumers will pay a 40-cent rate, instead of the original 25-cent rate.

Representatives of Windsor and other muncipalities belonging to the Municipal Gas Consumers' Association recently waited on rPemier Ferguson and Charles McCrea, minister of Mines, at Toronto, to urge the substitution of a new tribunal for the Natural Gas Board of Reference. The delegation also claimed that Col. R. B. Harkness, natural gas commissioner, had permitted the Union Natural Gas Co. to discriminate in favor of Sarnia against Windsor in regard to natural gas pressure and supply. Premier Ferguson stated that no action would be taken till the Union Natural Gas Co. had an opportunity to submit its side of the case.

STATE COMMISSION MAY FIX GAS RATES

The contention of the Oklahoma State Corporation Commission that a company supplying a public service utility company with power or gas is a public utility has been upheld in a decision handed down by the State Supreme Court. This decision gives the Corporation Commission authority to fix rates for a company selling to a distributing company.

The case which was passed upon was an appeal by the seven Oklahoma power companies from an order of the Corporation Commission issued in December. This question has been in the courts for years, the Oklahoma Natural Gas Co. having appealed to the United States Supreme Court. This court, however, sent the case back to the State courts.

GAS METERS VINDICATED

BRISTOW, Okla., Nov. 12.—The gas meters of the Bristow Gas Corp. are not running faster than the law allows, so far as his recent investigation showed, B. P. Stockwell, Oklahoma City, State gas and electric engineer for the Corporation Commission, stated in his report to the commission. Stockwell was sent here upon application of Assistant County Attorney Lawrence L. Jones and Mayor Malcolm Morrison, when James Blanenship, a former employe of the local gas firm, made allegations that certain meters were set to charge more gas than the owner of the place where the meters were located was using.

TEXAS GAS MERGER

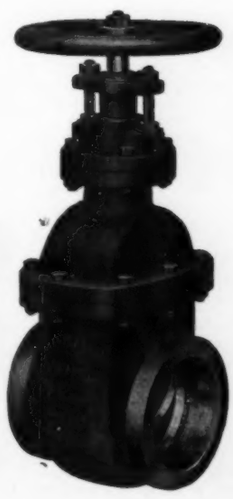
The Southwestern Gas, Light & Power Co. of Fort Worth, Tex., recently organized with a capital stock of $700,000 and headed by A. P. Garrett of Ranger, has taken over the assets and business of the Breckenridge Gas Co. of Breckenridge, the Ranger Gas Co. of Ranger, the Graham Gas Co. of Graham, the Olney Light & Power Co. of Olney, the Newcastle Light & Gas Co. of Newcastle and the gas distributing concerns at Bunger and South Bend in Young County, all in West Texas.

In Buying Gate Valves How Good is Good Enough?

Wherever gate valves are considered in terms of additional surety of tight joints, improved ease of operation and fewer replacements—purchasing agents of refineries, and oil operators are turning to the Gate Valve marked "Darling."

Men who use Darling Valves say that their efficiency reduces losses in production to a minimum. They seldom need replacement—they last for years. Back of this superior performance are the years of skillful engineering—of untiring experimenting—and of exacting workmanship with the best materials.

Those who make careful valve comparisons before deciding "how good is good enough" usually answer the question by specifying Darling—the Gate Valve that endures.



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831

EQUIPMENT AND SUPPLIES

Hypochlorite Method In Refining of Oil Detailed in Booklet

A new booklet on the hypochlorite process in oil refining has been issued by the Mathieson Alkali Works, Inc., of New York City, manufacturers of soda ash, caustic soda, bicarbonate of soda, liquid chlorine, bleaching powder, anhydrous ammonia and other chemicals used in the various branches of the oil industry.

The booklet describes the Mathieson Hypochlorite Process in detail and outlines its advantages. It says: "It has long been established that sulphur compounds occurring in petroleum products are objectionable and are largely responsible for the properties which refining seeks to remove. This is particularly true of gasoline and kerosene, in which sulphur compounds usually cause instability, offensive odor and corrosiveness to metal. In some cases, these offensive properties are not apparent immediately after refining, but develop during storage of the finished product. The hypochlorite process improves the odor and removes such sulphurous compounds as develop color and bad odor while gasoline and kerosene are in storage. Moreover, refining with hypochlorite solutions seems to be universally applicable to desulphurizing all the gasoline and kerosene distillates from all types of crude petroleum."

"No important equipment changes are necessary for installing the process; the hypochlorite solution can be made up in an ordinary steel tank and the treaters used for sulphuric acid are adaptable to the hypochlorite solution with little or no modification. Material reduction of chemical treatment losses and a greater throughput for the same capacity of treaters enables the Mathieson Hypochlorite Process to show a considerably lower refining cost. The production of a higher quality gasoline, however, is the greatest advantage of the hypochlorite process.

Change Involved

"In refineries using the batch method of treating the crude distillate, the only change involved in adopting the Mathieson Hypochlorite Process is the replacement of sulphuric acid by hypochlorite of lime solution. Where continuous treatment is employed, some modification in the order of solutions may be desirable but no important changes in equipment are required. In neither method of treatment is any expensive addition to existing installations necessary. In fact, experience has shown that ordinary steel apparatus can be used, since the corrosion of apparatus, piping, etc., is much less with hypochlorite of lime than with sulphuric acid.

"In refineries where the distillates are treated by the batch method, refining by the Mathieson Hypochlorite Process is carried out in the following manner. The first step is the preliminary caustic wash, using a caustic solution of from 8-14 degrees Baume or 12-21 degrees Twaddell. The volume of the caustic solution should be not less than 30 per cent of the volume of the distillate to be treated, in order to insure proper mixing.

"The proportion of hypochlorite solution required for a batch of distillate varies with the strength of the solution used, the average composition of the distillate, and the degree to which it is desired to carry the refining. For straight run distillates, the strength of the hypochlorite solution can vary between 20 and 30 grams per liter or available chlorine, while for cracked distillates better results have been obtained with weaker solutions from 5 to 10 grams per liter.

"The length of time required for the treatment is usually about 30 minutes, depending upon the efficiency of the circulation.

"The steps in hypochlorite refining by the continuous method are identical with those of the batch method, the difference being in the manner of carrying out the successive treatments. In the continuous method, the distillate is pumped through the system at a predetermined constant rate of flow and the refining agents are allowed to react with the distillate by passing the two solutions together through a suitable mixing device.

"The refining of petroleum distillates by the hypochlorite method is not new in theory, although its successful application is comparatively recent. The development and adoption of the new process was retarded by the natural conservatism in favor of the long established acid alkali treatment, and by the fact that only in recent years has liquid chlorine become a cheap, bulk staple of the chemical industries."

The booklet contains some valuable charts and tables and much other useful information about chemicals used in the refining industry.

STEEL ACTIVITY AT HIGH RATE; OIL FIELD GOODS AT FAIR VOLUME

By B. E. V. Luty

PITTSBURGH, Pa., Nov. 12.—The best indication of the volume of steel demand is the amount of steel shipped by the mills, as the buyers are not taking steel that they do not need, except perhaps, in relatively few cases in which there is steel due under quite old contracts, at less than current prices.

The rate of steel production, which is substantially the same as shipments, has decreased no more than a trifle since the end of September, and there is an estimate in one usually well posted quarter that production was at a slightly higher rate in October than in September.

Steel shipments are about two-thirds on new business, orders taken within the past month or so, and about one-third on old contracts. In the latter class is steel for locomotives and freight cars, bridges and buildings, pipe lines, etc.

Steel prices are holding very well, indeed. There have been no declines in the past week, and indeed there have been no declines at all since the steel market reached its top late in April, except hoops and bands, hot rolled strips and black sheets.

The prevalent opinion now is that all steel prices will hold through the year, while there is less prospect than there was recently that any prices will decline early in the new year. In the event of a declining market, which many observers really expected to see before this time, bars, shapes and plates would probably yield first. Tubular goods, wire products and tin plate would easily hold out the best should the market be subject to pressure.

Decided Improvement

There has been a decided improvement in sentiment in the steel trade, among both sellers and buyers, in the past 10 days. This improvement in sentiment is expected to count for something in making the market, and is traceable to a number of influences. One is the reaffirmation of former prices by the American Sheet & Tin Plate Co. (Steel Corp.) for the first quarter of the new year, an action which the trade feels would not have been taken unless the corporation management felt reasonably certain the market could be held. Another is the Steel Corporation's report, showing substantially as heavy earnings in the third quarter as in the second quarter, when many had expected a substantial decrease. The extra quarter per cent dividend declared on the corporation's common stock has also made quite an impression. Finally there is the plain fact that steel deliveries continue heavy, when substantial decreases should be expected. This shows that industrial activity, involving the consumption of steel, continues at a high rate, and men are concluding that they were less hopeful, two months and more ago, than they were justified in being.

Pipe Mills Close to Normal

Pipe mills continue to operate at a high rate, very close to normal capacity. Their shipments of oil country goods have been decreasing, but still represent a fair volume. Merchant pipe shipments are very heavy and there is urgent call for deliveries to jobbers, whose stocks are very low. Prices are strictly maintained on merchant pipe and on oil country goods generally, though it is possible that on a fairly large order for line pipe, a special price would be made, as is frequently the case.

The tin plate price of $5.50, recently reaffirmed for the first quarter, is being very strictly maintained. Some large can makers are being given protection over the half year, which they claim they need in order to sell cans, but tin plate sales generally are being confined to the first quarter.

A dull December, more or less seasonal, is expected, and not a few mills are likely to close for the latter part of the month. While prospects for the new year are not assured, they are easily better now than they appeared recently to be.

NEW HANDBOOK ON GEARS

William Ganschow, president of the William Ganschow Co., is editing a new handbook on gears and speed transformers which will be combined with the forthcoming Ganschow general catalog No. 100. The purpose of the handbook is to afford the user of gears and speed transformers easy access to formulae and data regarding their design and use. It contains much data usually found only in general engineering handbooks, and will be welcomed by users of equipment as a ready reference volume.

Aside from the formulae and data pertinent to gears and speed transformers, it contains much information useful in the designing of machinery to which they may be applied. There are also tables showing the strength and weight of materials, trigonometric functions, geometric formulae, decimal equivalents, wire and sheet metal gauges, and standard screw threads, together with other miscellaneous information.

Being combined with the Ganschow general catalog No. 100, it brings together in one volume all the information necessary for the design or specification of gears or gearing for any purpose, and shows complete lists for all products which are regularly manufactured by the William Ganschow Co.

FIGHTING OIL FIRES TOLD BY FIRE CHIEF

Several instances are cited in successful fights against oil fires in the latest number of the "Fire Chief," published by the Foamite-Childs Corp., of Utica, N. Y. A letter from W. C. Grosvenor, fire chief at the S. F. Bowser Co., Inc., Fort Wayne, Ind., shows something of the usefulness of Foamite in extinguishing crude and refined oil fires.

"Last week an incident occurred in our heavy tank shop which will be of interest," Chief Grosvenor says. "In removing a heavy gasoline storage tank from the tank shop, an electric crane did not lift the tank high enough to clear a nearby rivet heater. The heater was upset and its kerosene fuel exploded.

"The heat caused a sprinkler head of the automatic system to 'cut loose' and the water seemed to spread the blaze. One of your small Foamite extinguishers was put in action and quickly smothered the fire, which was then assuming a dangerous stage."

Letters from other heads of fire fighting departments gave numerous instances of the value of Foamite apparatus in putting out oil blazes.

RUSH ORDER TO POWELL ESTABLISHES A RECORD

The Petroleum Iron Works Co., of Sharon, Pa., on October 29, shipped its third solid trainload of products within two weeks to the East Central Texas oil fields, where the Powell Pool now holds the center of interest. It is thought by officials of this company that these shipments of steel plates will stand as the record for some time.

These three solid trainloads moved a total of 6,000 tons of steel which was loaded on 150 cars. The feature of the entire shipment was the fact that the tankage included in Train No. 1 was fabricated and placed en route to the oil fields within three days from the receipt of the order. It arrived at its destination in 120 hours, despite a delay of 24 hours to allow four cars derailed at Ohio City, Ohio, to be rushed to the train and included at a station farther down the line. Train Nos. 2 and 3, each comprising separate orders, moved in the same record-breaking time.

SUPPLY FACILITIES AT WEWOKA

The Continental Supply Co., last of the large supply companies to enter the Wewoka Field, has reserved selection of location on the Rock Island's industrial spur, according to the secretary of the Wewoka Commercial Club. Officials of the Continental went to Wewoka last week to let contracts for the erection of buildings.

NEW MANAGER FOR SHAWNEE

Announcement has been made by J. F. Owens, vice president and general manager of the Oklahoma Gas & Electric Co., that C. B. Owens, manager of the Shawnee Gas & Electric Co., with headquarters in Shawnee, has resigned from this position and that William B. Anthony has been appointed manager at Shawnee to succeed him.

NEW WELDING CATALOG

The Wilson Welder & Metals Co., Inc., have just issued a new catalog illustrating and describing Wilson Welding Machines and Wilson Color-Tipt Welding Metals, together with a number of attractive photographs of large electric welding repair jobs and steel tank work.

CHAMPION

Forged Connecting Rods *for* Stationary Gas Engines

The connecting rod is the very heart of these power units. That these engines should be able to deliver the power required influenced the makers to rely wholly upon the tough, sturdy, give and take strength of forged steel that absorbs shocks —that stands continuous use under heavy loads at high speeds.

As a result of careful investigation the Champion organization was selected to forge these parts. An appreciation of the importance of the work each forging must do, had its effect in influencing the makers of these engines to rely upon the sound engineering ability, common sense and seasoned forging skill of this organization to produce a connecting rod 63½ inches long, 4½ inches wide, with a 10-inch opening at one end and a 9-inch opening on the other. A forging weighing 275 pounds. Such an example is just another indication of the latitude possible in present day forging that makes products better.

A Champion Engineer, an experienced man, is ready to co-operate with you in working out your forging problem. There is no obligation and making your problems known today will build a sounder, safer business for tomorrow.

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New York Office—30 Church St. Philadelphia Office—Bourse Bldg.
Detroit Office—705 Ford Bldg.

DROP FORGINGS

No. 301

GASO SMALL PUMPS

Correct in Design—Sturdy in Construction

No. 604

No. 601

While we have had very gratifying success in the manufacture, sale and operation of **large** pumps (the largest ever built in the Mid-Continent was recently perfected in our shops) we have not allowed this success to interfere with our attention to our smaller pumps. The same careful construction, high-grade material and thorough inspection that thousands of users of our smaller pumps have received is still a part of regular Gaso service. Following is a brief description of the pumps illustrated herewith.

No. 301—Gaso Piston Power Pump. Usable in high pressure work, yet suitable for lease and low pressure work.

No. 604—Walking Beam Pump—for taking gas from pumping well and putting vacuum on well.

No. 601—Walking Beam Pump for oil or water. Has practically no gasket surface.

No. 201—Rodline Pump, designed for general service.

These are just a few of a comprehensive line. The services of skilled engineers are at your disposal in solving your problem. Shall they get in touch with you?

Gaso Pump & Burner Mfg. Co., Tulsa, Okla.

GASO PUMPS

for oil field uses

No. 201

NEW SHALLOW OIL FIELD BELIEVED TO EXIST IN NORTHERN TENNESSEE

By Dr. Willard Rouse Jillson
State Geologist of Kentucky

FRANKFORT, Ky., Nov. 12.—The bringing in, on August 18, 1923, of the Eugene Marcom No. 1 at Willow Grove, in Clay County, Tennessee, by A. A. Alexander and others, has served to call attention to the unusual opportunities afforded the oil and gas producer in this shallow section of the southern Appalachian region. The productive horizon, which is regarded as the second Sunnybrook sand, is 10 feet in thickness. Drill-cuttings indicate it to be a blue-gray, porous limestone, overlaid by a thin, compact, impervious, black, calcareous shale. Tests in dilute hydrochloric acid failed to show any considerable amount of insoluble siliceous materials in these cuttings. The sand was encountered at 412 feet, and the well was finished at 422 feet. During the first hour or two following the drilling in, the well flowed freely under heavy gas pressure uncontrolled; and it is estimated that about 500 bbls. of oil were lost in the waters of Irons Creek.

After flow line connections to a 250-bbl., gas-tight tank were made, the oil was conserved and the tank was filled within four hours. The well was then closed in. At the time the writer was engaged in making the reconnaissance of this field upon which this paper is based, August 24 to August 28, 1923, the Marcom No. 1 was driving petroleum under considerable gas-head along weathered bedding planes in the upper Ordovicic limestones to points 1,000 feet distant, where it emerged along the adjacent waters of Irons Creek much like a fresh natural seepage and formed a bright "rainbow" on the flowing water. This discovery well is conservatively estimated at between 1,500 and 2,000 bbls. of flush production. In some respects this well is much like the Budd Kerr No. 3, in the Kettle Creek (Ky.) Pool, which, after closing in when flowing at least 2,000 bbls. a day under a strong gas-head, continued to produce into a capped creek gravel with the result that an offset well drilled to a depth of only 20 feet at a point 4 feet from the casing-head of Kerr No. 3 is now producing between 500 and 1,000 bbls. per day when tankage is available. This freak well is undoubtedly the largest shallow well ever drilled in Kentucky.

Topography of District

Willow Grove, Tenn., is located just south of Obeys River on the lower waters of Irons Creek, in Clay County. It is 15 miles in airline northwest of Livingston, in Overton County, Tennessee, and 17 miles southwest of Burkesville, in Cumberland County, Kentucky. The town, which is little larger than a country crossroads, is located on an Ordovicic re-entrant which follows Obeys River into a northeast extension of the eastern highland rim of Tennessee. Creek bottom elevations at Willow Grove are between 580 and 600 feet, a United States Geological Survey bench-mark of 579 being located where the town's "Main Street" crosses Irons Creek. Hilltop elevations in this section are between 900 and 1,000 feet, the general relief being about 400 feet. The valleys are fairly broad, covered with limestone and alluvial soil. The hills are timbered and knob-like in appearance.

The stratigraphic section at Willow Grove includes representatives of the Mississippian, Devonic, and Ordovicic sediments. Siluric strata are not present. Above drainage, as shown in Pilot Knob (1,398 feet above sea level) the Mississippian series is represented by the Cypress sandstone, Casper limestone, Ste. Genevieve limestones and the St. Louis limestone. The underlying dissected plateau is made up principally of the Warsaw, Fort Payne, and New Providence formations. The Mississippian formations show a total thickness of about 950 feet. The Devonic section is represented only by the Chattanooga black shale (30 feet) which, however, may have a Mississippian component in its upper portion.

The Ordovicic beds are at drainage-level in the adjoining Obeys River, and for a short distance up Irons Creek are represented by limestone and shaly limestones which are of Richmond (Cincinnatian) and Maysville (Cincinnatian) equivalency. Their total thickness is perhaps 250 or 280 feet. Beneath, and not outcropping at the surface, are a succession of limestones and shaly limestones of Trenton (Mohawkian) horizon, represented by the Cannon limestones (300 feet) and the Hermitage shale (50 feet). The "Pencil Cave" (bentonite bed) of drillers is here found delimiting the Trenton. This distinguishing horizon is in turn underlain by the Lowville (Mohawkian) limestones (400 feet), and the Stones River (Chazyan) limestones (400 feet), in descending order. The figures here given for the several divisions of the Ordovicic section are, of course, estimates of thickness. A total of 630 feet is shown above the "Pencil Cave," and 800 feet below it, or 1,430 feet for the entire sequence.

Anticlinal Structure

The occurrence of oil at Willow Grove is distinctly anticlinal. The structure is an elongated dome of low, though pronounced figure, the major axis of which is south 60 degrees east. Dips to the southeast of 2 to 2½ degrees are obtainable on competent upper Ordvicic limestone beds. A maximum observable height of 35 feet is recorded for this structure. The structure itself is five-eighths of a mile in width, and is at least 1¼ miles in length, possibly longer. Production was secured in a porous, blue-gray limestone, at a depth of 412 feet, which is regarded in this section as the second, or lower, Sunnybrook sand, and is in the Trenton section. Sixteen gas blow-outs were encountered in this well below 136 feet, including the oil-producing horizon. All of these blow-outs removed the cuttings and the water from the well. No accurate formation log of the well was kept. The stratigraphic position of its casinghead, however, is about 20 feet below the base of the Chattanooga black shale. The blow-outs occurred at the following recorded depths in feet: 136, 153, 172, 188, 198, 216, 224, 226, 250, 268, 285, 303, 340, 355, 395, 412, to 422. A small amount of salt water was encountered at 260 feet, and a large flow of salt water at 365 feet. Casing 6¼ inches was set at 160 feet, 7 inches. At 392 feet, 6 inches a soft, porous limestone was encountered, and just above the top of the pay sand (412 feet) a gray-black calcareous shale which evidently was the caprock of the production horizon was pierced.

In the Kettle Creek Pool, 4 miles to the northwest, the following sands, with depths, are now producing oil: (1) Shallow stray, 168 feet; (2) First Sunnybrook, 212-220 feet; (3) Anderson, 295 feet; (4) Second Sunnybrook, 392-450 feet. The last three of these sands are Trenton beds. Two additional deeper sands are now productive in Cumberland and Clinton Counties, Kentucky, which lie immediately north of Clay County, Tennessee. Both of these deep sands are to be regarded as productive possibilities at Willow Grove and throughout this region generally. The first of these deep sands occurs at 1,050 feet below the Chattanooga black shale, and is probably in the Lowville strata; the second occurs at 1,300 feet to 1,350 feet below the Chattanooga black shale, and is the subject of stratigraphic dispute. Its depth would seem to indicate that it is a Stones River bed. If in reality, however, this second deep sand is lower, due to a shortened section, it would

(Continued on Page 100)

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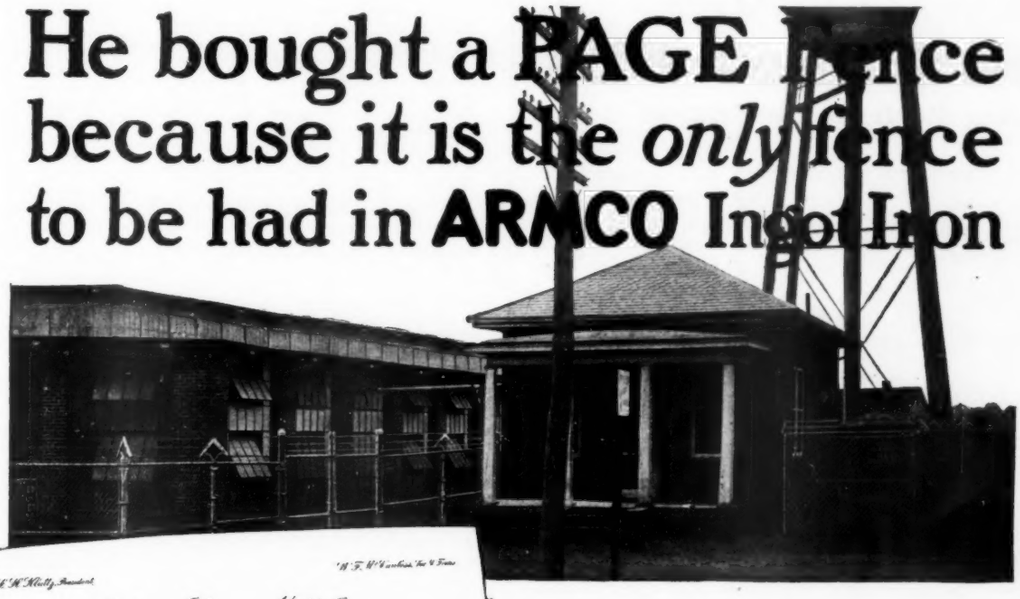

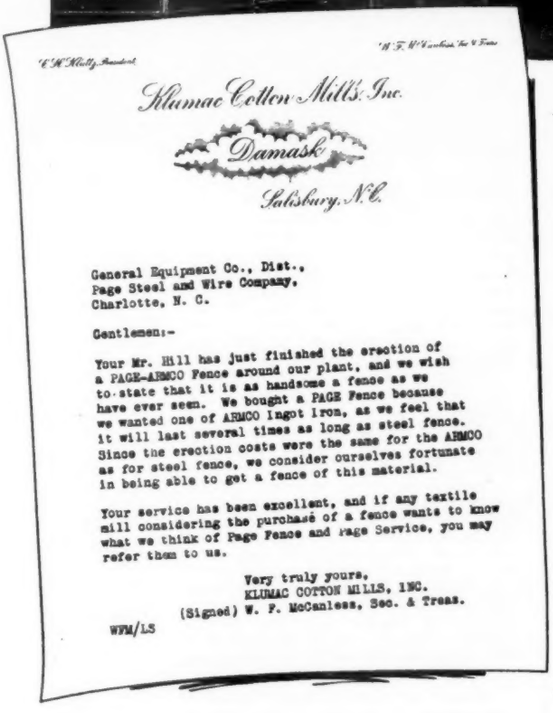

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Your service has been excellent, and if any textile mill considering the purchase of a fence wants to know what we think of Page Fence and Page Service, you may refer them to us.

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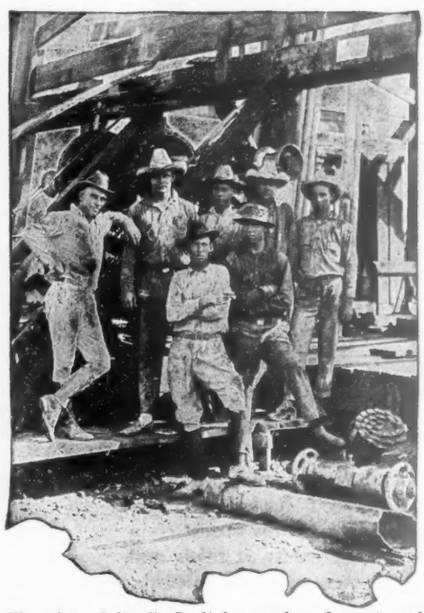

First from left—G. O. Nokes, tool pusher; Second from left, F. E. Blythe, head driller of night crew.

Right through 131 feet of hard rock with only one pull out, same being necessary on account of the formation.

Contrast this with having to pull out frequently to refill oil chamber (which was the old method.)

Figure the time thus saved — and the risks of the pull out—and you will know one of the big reasons why popular demand for Reed Bits is sweeping rotary fields everywhere.

The run made in 48½ hours with one set of cutters was done **without a drop of lubricating oil,** using slush for lubrication.

Slush lubrication is a Reed system exclusively and is possible in no other bits; this is admitted in sworn testimony by competitors.

The strongest rock bit ever built—likewise fastest and safest.

Drilling crews are at their best when furnished with Reed Roller Bits and Reamers.

Anything that lessens the risk of losing a hole, eliminates needless pull outs and speeds up drilling, wins over the driller—right now.

We wonder if there are any drillers, who do not know about this Reed Slush Lubrication System? If there are—we want them to write us for a copy of "Rubiayat of O'Gosh Dingut"—it tells the whole darn story as it came right off the derrick floor.

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CALIFORNIA OFFICE: 1341 Santa Fe Avenue, Los Angeles. Phone 660-68. Ask for Mr. E. B. Wiggins.

INCREASE IS SHOWN IN SEPT. OIL CONSUMPTION

(Continued from Page 64)

improve until that occurs. Production for September also showed a new daily record, although as in August, there was not the large increase which was the monthly development during the spring and summer months. Since September, as reported weekly in The Oil and Gas Journal, there has been no material change in the total production of the United States, indicating that Government reports for October and November will not show any improvement over September in the comparative relationship of crude supply and demand.

Another development, as shown by the Government reports for September, is the large decrease in the total refinery stocks and the increase in pipe line stocks (gross). The September reports indicate that the surplus crude was added to the pipe line stocks rather than those of the refineries. This is probably a development of the generally unsatisfactory refined market situation in which refiners, in probably a majority of cases, have been unable to operate at a profit. The September report indicates that instead of taking a part of the surplus crude, as they did in the spring and summer, and thus aiding the producers, they have devoted their energies to the lowering of their crude stocks and the stocks of some of their refined products. As a result, despite a 5,903,390-barrel surplus of production over consumption, total stocks were decreased 3,393,903 barrels. Runs to stills were also decreased 2,429,224 barrels.

Pipe Line Stocks Increase

This action on the part of the refiners resulted in the gross pipe line stocks being increased 9,406,000 barrels, an increase which is approximately equal to the average during the heavy overproduction of the spring and summer months. In brief, the entire burden of excess production in September was on the pipe line companies. This situation has probably continued up until the present time because the refined market has not improved and is in fact now generally lower than it was in September. Refiners, in many of the areas, have reduced their runs slightly, scattered reports indicating that all have been endeavoring to lower their stocks.

The market importance of this development is obvious. The pipe line companies, pressed to handle this excess production, logically will reduce the price. This reduction has occurred in practically every field of the United States and Mexico since the first of September and the drastic reductions of the past week are a direct development of this situation. If the refining industry continues this policy it is apparent that while they may bring further reductions in the crude market they will at the same time aid the market for their products by restricting the amounts available.

Among the refined products, the heavy consumption of gasoline during September was most interesting and it explains the fact that gasoline prices at the refineries were generally firm during the month. The consumption was 32 per cent greater than September of last year. It contrasts with the 26 per cent increase for the first seven months of this year over the same period last year. This large consumption, despite a 20 per cent increase in production over last year, brought a 81,161,389-gallon reduction in stocks which, for the first time since last January, are now below one billion gallons. Although the stocks are still 40 per cent greater than the same period last year the large reduction was a material aid to the market at a time when it was entering the fall and winter period. Last year the September reduction in stocks was less than 14,000,000 gallons.

Fuel Oil Use Greater

Fuel oil again increased but not so much as production and 19,021,864 gallons were added to the total stocks. It will be noted that fuel oil stocks have been making a steady climb ever since the first of June, although consumption has been larger than in previous years. This overproduction situation has brought about a weaker market. Due to the low prices for gasoline which have prevailed for several months, refiners have produced more fuel oil from their crude and this has also been a factor in the large fuel oil production.

The present strength of the kerosene market was indicated in September when there was an excess demand over supply which reduced stocks 5,593,544 gallons. Stocks at the end of September were at the lowest level in the recent history of the industry. Kerosene is now practically the only refined product which may be termed "strong" and this indicates that the demand is still exceeding the supply. At the present time it has the most favorable market outlook of any of the refined products.

In October, the only important price change as shown by the graphs was the 1½-cent reduction in the kerosene tank wagon. The present relationship between the tank wagon and Group 3 refinery price is about the average. The Mid-Continent crude price and the Chicago gasoline tank wagon price were unchanged during October. There was practically no change in the Group 3 refinery prices on gasoline and kerosene during the month. Fuel oil showed temporary strength the first of the month with higher prices, but later reduced to the September level.

OIL LEASERS ACTIVE IN NORTHERN MEXICO

HOUSTON, Tex., Nov. 12.—Northern Mexico seems destined for a play when conditions in the oil industry improve. Leasers have been active north of Monterey and Linares and to the northeast. The Huasteca, International, Freeport-Mex. Transcontinental and The Texas companies are interested in a joint test drilling 6 miles east of Linares with a diamond drill. The contract depth is 3,500 feet.

Jones & Buchanan of Tampico, are starting a test 8 miles east of Linares. McKay & Co. is resuming work on a test down 800 feet on the Marango, west of Rodriguez.

Big blocks of acreage have been acquired by American companies. The Panuco Petroleum Co. has 50,000 acres 40 miles down the Rio Grande River from Laredo. The Tamanpilos Oil Co., a subsidiary of the Humble Oil & Refining Co., is credited with acquiring a lease on 100,000 acres around Guerraro.

On the Texas side of the river, the Sinclair interests have 4,000 acres 6 miles south of San Ignacio and the Empire Gas & Fuel Co. holds leases on 45,000 acres in Starr County.

OIL IN WEST AFRICA

It is reported that petroleum was found recently at the Cunga well, the property of a subsidiary of an American company, at a depth of between 4,200 and 4,300 feet. A small quantity of heavy oil of good quality was brought up by the bailer. It is said that the well is yielding 500 liters each 24 hours, but this report is believed to be exaggerated. Cunga is located near the Loanda Railway, not far inland from Loanda. It is understood that the well will now be sunk to perhaps 5,000 feet and that another well will be started in the neighborhood.

C. E. BRADEN SUCCEEDS FATHER

At a special meeting of the board of directors of the Burke-Hintze Co., at the offices of the Braden Co., Charles E. Braden was elected to fill the vacancy caused by the death of his father, the late Glen T. Braden, as a director and chairman of the board. Other officers of this company are C. R. Burke, president; Thomas F. Hintze, vice president, and Robert H. Bartlett, treasurer.

Cheer up!

Mr. Oil Man:

Better business is coming—possibly sooner than is generally realized. The worst is over.

You should at once arrange for repairing your Tank Car Equipment while you can spare it, so it will be ready for reliable service by the time you will need it. We have excellent facilities and experienced organizations for this at several of our plants.

We would also recommend placing orders now for new cars, to insure deliveries within your requirements and avoid paying higher prices.

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REFINING AND MARKETING SECTION

New Parco Program Expected in Wyoming By the Prairie Merger

CASPER, Wyo., Nov. 10.—The merger of the Producers & Refiners with the Prairie interests will work to the great advantage of this region, according to opinion here. Much weight is given the statement of Superintendent S. E. Richardson of the Parco refinery of the Producers & Refiners in a talk before the Rawlins Lions Club recently that next spring would see a larger development of the Parco refinery. This refinery is about the third in size in this State, though not the third in operating capacity at present because all the units are not ready for work. When the present construction is done, the Parco plant is expected to rank second in the Rocky Mountain district.

Mr. Richardson's talk is taken to mean that since the merger with the Prairie a new program has been mapped out for Parco and that refinery is to be on a par with the big plant of the Standard of Indiana at Casper.

The Standard's plant has a capacity of 55,000 bbls. daily and its size is probably limited by its location. The Greybull refinery of the Standard takes care of all the territory northwest of Casper and this leaves only the territory east of Casper to the big plant so that most of its product must find a foreign market outside of its immediate territory. The Parco plant is on the Union Pacific Railroad and can lay down its products at a lower cost over a much greater territory than the Standard refinery at Casper for that reason. The Standard of Indiana also has a refinery at Laramie on the Union Pacific, but this plant is limited in capacity because of its having only the Rock River Field as its crude supply while the Parco plant has a trunk line extending from Salt Creek across central Wyoming to the Lost Soldier Field and thence to Parco.

The plant of the Utah Oil & Refining Co. at Salt Lake City is also owned by the Midwest, a Standard of Indiana subsidiary, but the Utah's plant is so far from any large field that its overhead for transportation of crude makes it hard for the Utah to compete with the other refineries in Wyoming. It is stated by prominent oil men that refined products from either Laramie or Parco can be laid down in Salt Lake City for less than these products can be manufactured at Salt Lake from crude hauled from Wyoming fields.

BIG GASOLINE PLANT NEAR BRECKENRIDGE

BRECKENRIDGE, Tex., Nov. 12.—Within a few days the Hanlon Gasoline Co. will start construction work 2 miles southeast of here on what, it is said, will be the largest gasoline plant in the United States. The plant when completed will handle 50,000,000 feet of gas daily with an output of approximately 50,000 gallons. It will require about four months to complete the plant.

The company, which is allied with the Chestnut & Smith Corp., the largest marketers of natural gasoline in the United States, has the gas rights to 40,000 acres of land surrounding the new plant. The same interests have other plants and large gas rights in this section. The Hanlon Gasoline Co. recently purchased two plants of the Hipower Gasoline Co., located near here.

TWO GASOLINE PLANTS ADDED BY SKELLY CO.

The Skelly Oil Co. will have two additional gasoline plants in operation in the near future. Within 10 days the company will start operating a plant located at Maramec in Pawnee County, Oklahoma. This plant, of the absorption type, will have a capacity of 8,000 gallons with six units. The second plant will be completed within a month in the northwest quarter of Section 11-25-5, part of the north extension of the Burbank Field of Oklahoma. It is also of the absorption type and will have a capacity of 15,000 gallons.

With the completion of these the Skelly Oil Co. will have 12 gasoline plants with a total capacity of approximately 100,000 gallons daily. Its present actual output of between 70,000 and 75,000 gallons daily is among the largest of the United States.

FT. WORTH LUBRICATING PLANT

FORT WORTH, Tex., Nov. 12.—The Transcontinental Refining Co., of this city, will have its lubricating plant at its refinery here in operation early in December. Construction work at the plant is rapidly being completed. The cracking stills are part of a pressure process which was invented by A. J. Slater, general superintendent of the refining operations of the Transcontinental Refining Co. The company is also installing the process at the Boynton, Okla., refinery of the company.

TO CLOSE CHICAGO OFFICES

CHICAGO, Nov. 12. — The Sapulpa Refining Co. will close its Chicago offices within the next two weeks. The company recently, through voluntary action, was placed in the hands of a receiver. The refinery of the company, located at Tulsa, is now shut down. The local office of the company was engaged primarily in the handling of the company's refinery output.

WISCONSIN JOBBERS TO MEET

The Wisconsin Independent Oil Jobbers Association will hold its regular monthly meeting at the Hotel Plankington, Milwaukee, Wis., November 14. An interesting program is being prepared for the meeting.

Compiled from the Published Statistical Records of the United States Geological Survey, September, 1923, and First Nine Months 1922 and 1923

Marketed Prod.:	Barrels	Daily Average
Sept., 1923, 30 days...	64,352,000	2,145,067
Sept., 1922, 30 days...	45,805,000	1,526,807
Increase	18,547,000	618,260
Aug., 1923, 31 days ...	65,936,000	2 126,968
Sept., 1923, 30 days...	64,352,000	2,145,067
Difference	1,584,000	18,099
First nine months 1923, 273 days	533,133,000	1,973 015
First nine months 1922, 273 days	410,442,000	1,503,451
Increase	122,691,000	469,564
Consump. dom. and imp. pet.:		
Sept., 1923, 30 days ...	60,447,000	2,014,900
Sept., 1922, 30 days ...	48 166,000	1,605,533
Increase	12,281,000	409,367
Aug., 1923, 31 days ...	62,447,000	2,014,419
Sept., 1923, 30 days ...	60,447,000	2,014 900
Difference	2,000,000	481
First nine months 1923, 273 days	523,631,000	1,936,379
First nine months, 1922, 273 days	425,056,000	1,557,716
Increase	98,575,000	378,663

WHITING MEMORIAL HOUSE GIFT OF ROCKEFELLERS AND STANDARD

WHITING, Ind., Nov. 12.—The Whiting Memorial Community House, a gift to the city of Whiting, by the Standard Oil Co. of Indiana, John D. Rockefeller, Sr., and John D. Rockefeller, Jr., was dedicated today. The building was erected in memory of those who served in the World War, and the dedicatory exercises were under the auspices of the American Legion, Whiting Post No. 80, which has a membership of 400.

The great refineries of the Standard Oil Co. of Indiana are located at Whiting, employing about 4,300 people. Five hundred and eighty Standard Oil Co. of Indiana employes enlisted in the World War.

The building alone cost $500,000. Of this amount the Standard Oil Co. of Indiana contributed $325,000; John D. Rockefeller, Sr., $100,000, and John D. Rockefeller Jr., $75,000. The furnishings cost $60,000, and it is claimed it is the finest community house in the United States.

The building has three main divisions, arranged to accommodate the various activities. There is an auditorium seating 1,000. There is a spacious and inviting general lobby, general social room, billiard room, with eight tables, social and reading rooms, refreshment lobby, swimming pool, men's gymnasium, eight regulation bowling alleys, dining room with a capacity of 250, and boys' department.

On the second floor is a large general club room, the beautiful memorial hall with trophy cases and appropriate mural decorations, and adjacent rooms to be used by the American Legion as headquarters. To the rear is the running track of the men's gymnasium, boxing and wrestling room and a regulation hand-ball court.

The woman's department contains, on the first floor, the women's social room, cloak room, gymnasium and director's office. In the basement are the locker and shower rooms, the large girls' room and separate entrance to the swimming pool. The main feature on the second floor is the club room, equipped to take care of meetings and social events by the women's organizations of Whiting.

Dedicatory Tablet

A bronze tablet in the main lobby was unveiled and bears the following inscription:

"This building is the gift of the Standard Oil Co. of Indiana, John D. Rockefeller, Sr., and John D. Rockefeller, Jr., to the people of the city of Whiting and is dedicated to the memory of those who served their country in the World War and to the perpetration in this community of the principles for which they fought."

Another tablet dedicating the American Legion room was unveiled and bears the following inscription:

"They who sacrificed their utmost shall ever live in the memory of their comrades of the World War. To perpetuate that memory we dedicate this room.

"Whiting Post No. 80 American Legion."

An additional bronze tablet in the Le-

(Continued on Page 107)

No Definite Proffer Made on Merger of Continental-Mutual

No definite proposal involving a merger between the Continental Oil Co. and the Mutual Oil Co. has ever been made by either company, according to a wire to The Oil and Gas Journal from C. E. Strong, vice president of the former company. The supposed merger has been given wide publicity of late in oil circles. The Continental Oil Co. is primarily a marketing subsidiary of the Midwest Refining Co., operating in the Rocky Mountain States.

The Mutual Oil Co., in which the Standard Oil Co. of Indiana is directly interested as a stockholder, has large production holdings in the Mid-Continent areas with marketing facilities for part of its output. Confidence is expressed in financial circles that a merger of the two companies will be effected in the near future.

REFINED MARKET WEAK IN OIL CITY REPORT

OIL CITY, Pa., Nov. 10.—With the exception of kerosene, wax and lubricants all of the northwestern Pennsylvania refined markets are weaker than a week ago.

Gasoline is soft and not much is moving. There seems to have been a considerable slowing down in the demand for motor fuel during the week, probably a reflection of the smaller consumption on account of the colder weather which has prevailed in the East. The price of gasoline has also dropped.

Fuel oil, which has been one of the best features of the market for some time, is now much softer. Kerosene is barely holding its own. Wax is still firm. Lubricating stocks are holding their own but that is all that can be said about them. Neutrals are a little softer but not much.

One of the surprising features of the local refined market was the fact that the cut in Mid-Continent crude prices did not cause any severe price decline. However, all the oil men look for a decline in Pennsylvania crude, and when that comes they believe the refined market will decrease.

TEXAS OIL MEN MEET FT. WORTH WEDNESDAY

Independent refiners, marketers and jobbers of Texas will hold an organization meeting at the Texas Hotel, Fort Worth, Tex., on November 21 and 22. An invitation has been issued for all engaged in these branches of the industry to attend the meeting and a large representation from all parts of the State is expected.

L. V. Nicholas, president of the National Petroleum Marketers' Association, has accepted an invitation to address the meeting. James K. Helmar, of the Radio Petroleum Co., Neil P. Anderson Building, Fort Worth, Tex., is chairman of the committee on arrangements.

NEW TAGLIABUE CATALOG

The C. J. Tagliabue Manufacturing Co. has issued Catalog 699, the company's latest on oil testing instruments, and also a bulletin on the TAG Air Mono, which is of interest to the trade. These may be had free upon application. The company's main offices are at 18 to 88 Thirty-third Street, Brooklyn, N. Y.

Price Is Not Everything

Have you ever wondered how wells in the Pennsylvania field, producing at the rate of approximately ⅛ to ½ barrel a day, could compete with the 5,000 barrel gushers of other districts?

Large production and lower prices, while welcome enough in themselves, are, after all, merely comparative. Economical performance and a reputation for the best oil obtainable is more important in the long run.

To the customer with a true sense of values, low priced oil merchandise, like hotel cooking, is apt to leave a hankering for something not on the bill of fare.

PENN AMERICAN

dependable Petroleum products

have filled the bill for nearly two score years because of the exceptional qualities of lubricants made from superfine Pennsylvania grade crude.

PENN-AMERICAN REFINING COMPANY
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Boiler Troubles From Poor Feed Water

Priming, Foaming, Corrosion and Scaling, Their Causes, Ill Effects and Proper Remedies Set Out For Oil Men

By Jerry E. Stillwell

TROUBLES ANALYZED AND REMEDIES NOTED

The proper treatment of boiler feed water is of importance to operators of petroleum properties, in field pumping stations, natural gasoline plants, etc. This article deals with the ill effects and origin of impure feed water and the appropriate remedies. It also covers water used for cooling the jackets of internal combustion engines.

Priming, foaming, corrosion and scaling are discussed in detail, scale formation and prevention being the chief subject considered.

Operators of petroleum properties, more particularly of the long-neglected field stations such as pumping plants, natural gasoline plants and the like, are more and more realizing the need for proper treatment of water used in boilers and in cooling engine jackets. In the following, the ill effects and origin of impure feed water are noted and the approved remedies are stated. Throughout the entire discussion the term "boiler feed water" has been used; but the fact should be made clear at once that essentially the same principles govern in those cases where water is used for cooling the jackets of internal combustion engines.

Boiler troubles arising from poor feed water may be classified as priming, foaming, corrosion and scaling. The man interested only from the standpoint of engine cooling will find little in priming and foaming to bother his operations; as compared with scaling, corrosion is of small consequence in engine cooling although more serious than priming and foaming, and it so happens that conditions which promote foaming may also be of moment in corrosion. Scaling is unquestionably of considerable importance in jacket cooling, while it is of prime importance in steam generation. The subjects of scale formation and prevention quite naturally occupy the major share of the discussion.

Priming and Foaming

Priming may be defined as the passing off of steam in spurts or belches which carry water over to the engine. It is caused by high concentrations of various impurities, the most common being sodium carbonate (soda ash), sodium sulphate, and sodium chloride (common salt). The degree of concentration necessary to cause priming will vary with operating and other conditions. Priming due to certain factors may be lessened by proper chemical treatment, but in most cases it can be lessened or eliminated merely by frequent blowing down. If this involves too great a heat loss it may be advisable to change the source of supply.

Foaming occurs when scum or suspended particles collect on the surface of the water in the boiler in such quantities that steam is liberated with difficulty. When in this condition the entire steam space in the boiler may be filled with bubbles. As compared with the causes of scale formation, the causes which promote foaming are relatively hard to locate, since conditions of service, type of boiler, etc., may be of considerable influence. Foaming is often caused by organic matter in the feed water, and in such cases can be eliminated by settling tanks, or filters, or both. In extreme cases it may be necessary to use coagulents in conjunction with the filter or settling tanks. Foaming may also be due to the saponification of light precipitates by animal or vegetable oils, which would result in a soapy or suds-like scum on the surface of the water. The combination of such oils and excess soda ash might also cause foaming. Speaking broadly, the mineral constituents causing foaming are alkali salts such as sodium chloride, sodium sulphate, sodium carbonate, potassium chloride, etc.

The fact will be recognized that priming and foaming are closely related; a water which causes foaming need not necessarily cause priming, but almost invariably a water which causes priming will also cause foaming. Foaming is a surface condition, and once present may be remedied in part by surface blow-off. The objectionable character of foaming and priming should be almost self-evident; it becomes difficult, if not impossible, to determine the amount of water in the boiler by means of the gauge glass; wet steam means waste heat; excess water in the steam cylinder may result in a blown cylinder head; grit carried along with the water means frequent reboring of cylinders and reseating of valves.

Corrosion

Corrosion may be defined as a rusting away, or oxidation, of the metal in the boiler. It is caused primarily by the presence of the hydrogen ion, two of which give up their positive electrical charges to the passive boiler steel, thus rendering the steel subject to dissolution in water. Water is commonly called a universal solvent. Therefore every substance, including boiler steel, has an inherent tendency to dissolve in water, or to pass into solution in water. This tendency of metals to dissolve in water is called oxidation, and chemists have defined oxidation as an increase in the number of positive charges upon the element oxidized. When the hydrogen ions give up their positive charges to the steel, free hydrogen is liberated. Ordinarily this free hydrogen will cling to the surface of the metal and tend to prevent further corrosion. If, however, oxygen be present, it will combine with the hydrogen to form water, thus clearing the way for more hydrogen ions to transfer the positive charges to the steel. Under ordinary conditions oxygen and hydrogen unite very slowly, but when in contact with a metal surface, such as platinum, the action is quite rapid; when the surface is iron the action is slower, although still very much faster than on an aluminum or zinc surface.

Therefore the fact may be stated at once that if air be removed from boiler feed water no corrosion will occur. Comparatively speaking, water is an excellent solvent for air, or oxygen, which, however, may be removed easily by heating in an open feed-water heater. One authority states that cold feed-water under a pressure of 150 pounds absorbs 3.2 pounds of oxygen per ton of water. The fact should be noted that even pure water is dissociated to a certain extent into the hydrogen and hydroxyl ions; any circumstance tending to increase the concentration of hydrogen ions will hasten corrosion. Such would be the case when the water contains acid; even carbon dioxide gas dissolved in the water will hasten the corrosive action. Hydrochloric acid is almost completely ionized in solution; therefore the presence of those minerals tending to form this acid or any other acid, for that matter, will increase corrosion; magnesium chloride may be mentioned particularly. Corrosion in certain instances has been traced to the use of "boiler compounds" which upon analysis were found to contain tannic acid or sulphate of copper. Increasing the hydroxyl ion by the addition of an alkali or alkaline salt will retard corrosion; this may be accomplished by adding lime; when fatty acids are present soda ash might be the proper treatment.

Lessening Corrosion

The word "oxidizaion" has been used in the foregoing discussion. In further explanation it may be stated that the action noted above, where the metal goes into solution, in reality results in the formation of a hydroxide of the metal, ferrous hydroxide in the case of boilers, which is thereupon oxidized by the oxygen in the water, thus producing the familiar red ferric hydroxide commonly known as rust.

Space limitations forbid a complete discussion of boiler corrosion; galvanic action between different metals has not been touched upon; corrosion due to electrolysis is omitted; the different forms in which corrosion may appear, such as pitting, general corrosion and grooving, are ignored; however, the essential points are as stated above. Seemingly slight variations in conditions may cause quite a difference in the amount of corrosion; it does not seem possible to predict accurately from a preliminary analysis what may be expected in all cases, but there is little uncertainty regarding the preventative.

Summing up, it may be said that corrosion may be lessened or prevented by reducing the acid content of the water, and by causing the removal of oxygen contained in the feed water.

Scaling

Incrustation or scaling is probably the most common and the most persistent of the troubles arising from the use of poor boiler feed water. Scale is simply a deposit or crust formed on boiler shell and tubes because of impurities present in the water. Essentially all known substances are soluble in water to a greater or less degree, therefore all natural feed waters invariably contain impurities. Even rain water is not absolutely pure, but it is very seldom that impurities are present in rain water in sufficient quantities to render the water injurious from the standpoint of scale formation. In this connection it may be observed that quite often the view is held that absolutely pure water, such as rain water, is injurious to boilers. Such is not the case. The harmful results sometimes observed when using rain water are not due to its purity but rather to the impurities such as carbon dioxide and oxygen, which enhance corrosion. Also, as is shown further on, carbon dioxide may cause the water to pick up previously deposited corbonates, only to lose them again in the boiler. Rain water collected from soot-covered roofs often contains acid.

The water solubility of almost all substances is a function of the temperature, the degree of solubility or amount of the substance that will remain in solution, increasing with higher temperatures. A few substances are less soluble in hot water than in cold, an example being calcium hydroxide or ordinary hydrated (slaked) lime. Also a few substances are soluble to about the same degree in either hot or cold water, of which group sodium chloride or common salt is a familiar example. In any case if the volume of water is reduced, as for instance when steam is evaporated from water in a steam boiler, until the concentration of the impurities becomes so great that the water tends to become saturated, then some of the substance must go out of solution, i. e., will be precipitated. In the case of internal-combustion engine-cooling and with certain minerals in the water, the increase of temperature alone will tend to cause a deposit of scale. The harmfulness of impurities in boiler feed water depends to a certain extent upon the character of the precipitate, or upon the form which it assumes in the boiler. We are neglecting here the caustic embrittlement due to excess soda ash in the water.

Meaning of "Hard" Water

It has become the universal custom among engineers and chemists to use the term "hard" as descriptive of those waters which contain scale-forming ingredients, the word "soft" indicating a low content of scale-forming constituents. Specifically a hard water is one which contains in solution minerals which curdle or precipitate soap. Practically all water which comes in contact with earthy material is hard and an attempt has been made to classify water according to the total amount present of scale-forming material. The American Association of Railway Chemists has adopted the standard of 8 to 15 grains per gallon as "good," below 8 grains, "very good; 15 to 20 grains per gallon, "fair"; and so on. Such a classification is hardly acceptable from all standpoints, since no account is taken of the nature of the scale, nor of the different methods used in preventative measures. Neglecting the nature of the scale formation, a 50 H. P. boiler operating at normal capacity in one week's time would deposit 24 pounds of scale from a water analyzing 8 grains "hardness" per gallon; 15 grains hardness would produce 48 pounds of scale, and 20 grains hardness would produce 68 pounds of scale.

Precipitates in boilers may vary from a soft slush or mud, which can be adequately removed by proper blowing down, to a scale or crust of almost flinty hardness and which is exceedingly difficult to remove. The scales from some minerals are soft and friable, but when combined with certain other minerals they form hard and dense scales. In any case boiler scale is decidedly detrimental. It retards the transmission of heat; it is liable to cause a high temperature in the plates, thus inducing softening; a sudden break in the scale, admitting water to direct contact with the highly heated metal might cause the liberation of hydrogen and oxygen; the high temperature maintained in the steel because of scale might enhance the absorption of sulphur and oxygen by the metal thus promoting deterioration. The chief objection to scale is the reduction in the heat conductivity, necessitating an increased amount of fuel. Authorities differ as to the loss. Parr of the University of Illinois states that a conservative estimate would place the loss of fuel at 10 per cent for each one-tenth inch in thickness of the scale. If the fact be recalled that ordinary pipe covering or heat insu-

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Thin Plate Orifice Measurement of Gas

Results of Investigation of Various Factors Entering into Accurate Calculation Are Shown From Experiments Performed

By H. R. Pierce, Assisted by W. R. Jones, Morris A. Scheihardt, and Hjalmer J. Peterson
As Read Before Mid-Continent Section of American Society of Mechanical Engineers

In measuring gas by an orifice meter, we know the area of the orifice, and obtain the drop in pressure across it usually in inches of water. From the drop across the orifice reduced to head in feet of flowing fluid the velocity of the flowing fluid is deducted and velocity over a known period time area is equal to quantity. There is always a difference in the actual quantity discharged through an orifice and the amount calculated from the area of orifice and calculated velocity from the H across it. (See diagram).

This difference is caused mainly by three things:

The stream of gas does not fill the orifice, but upon coming into contact with the upstream edge of the disk it is formed into a ventura shaped stream with the throat about .62 of the area of the orifice.

The velocity of the throat is about .98 of the calculated or theoretical velocity.

The gas has a velocity in the pipe line approaching the orifice which velocity is not accounted for by the H in the formula. This last factor is the one which the C to increase as the area of the orifice approaches the area of the pipe and sometimes causes the C used in the hydraulic formula to be greater than one.)

Coefficient of Quantity

Therefore the coefficient of quantity is equal to the area of orifice times .62 (.98$\sqrt{2gH}$+Velocity of gas in the pipe. (See diagram).

Some symbols that will be used:

h=Drop in pressure head across the orifice in inches of water.

H=Drop in pressure head across orifice expressed in feet of flowing fluid.

g=Acceleration of gravity.

A=Area of orifice in square feet.

N=A constant taking in simplification and reduction factors, etc.

D=Inside diameter of pipe.

$X=\frac{d}{D}$ or ratio of diameter of orifice to diameter of pipe.

C=Coefficient of velocity and contraction V of approach.

Qa=Quantity measured by standard.

Qc=Quantity calculated by size of orifice and differential.

$C=\frac{Qa}{Qc}$

V=Velocity of fluid feet per hour.

v=Velocity feet per second.

The velocity of a flowing fluid through an orifice is deduced from the drop in pressure head across it in feet of the flowing fluid, and in practice the hydraulic formula v$\sqrt{2gh}$ is used and will be the one discussed in this paper.

In measurement of water it is used in its uncomplicated form and Q=NC$\sqrt{2gh}$ but when it is used for gas measurement it is complicated due to the fact that h is usually measure in inches of water, and in a compressable fluid must be reduced to feet head of flowing gas at the flowing temperature of the gas and pressure, also the volume must be reduced to a standard pressure and temperature, when in working form the practical formula is Q=NC$\sqrt{HP}$. Assuming T_1 and T_2 to be the same. P absolute pressure is taken at K_1 K_2 or K_3 in practice. (See diagram).

There are other complications due to the fact that different investigators have chosen different locations for their differential and pressure taps on each side of the orifice plate—but most of them have chosen taps which give the maximum drop across the disk or taps of least drop—that is the upstream connections (hereafter known as K_1) are usually in a plane of normal flow upstream.

There are two places down stream in common use K_2 at vena contracts or point of maximum velocity down stream and K_3 point of normal recovery down stream.

Hereafter, these taps will be referred to as $K_{1\,2}$ and $K_{1\,3}$.

Either of these pressure connections are all right with static pressures taken at either K_1 K_2 or K_3 provided the differential does not bear too great a ratio to the absolute static pressure of the chosen tap—but when the differential in inches of water divided by the absolute pressure in pounds reaches two or more or $\frac{h}{P}$ =2 or more the error in measurement is appreciable.

P at Kx

Kx=Any pressure tap.

Reasons for Experiments

Due to the above mentioned fact being suspected and because there is some controversy as to the choice of place above and below the orifice for $K_{1\,2}$ and $_3$ taps, also as to where the static pressure should be taken (that is, up or down stream).

As inspector for the Osage Nation, I determined to run experiments to learn accurately the coefficients for the two sets of taps generally accepted as standards; to determine the error introduced by using the hydraulic formula Q=CN$\sqrt{HP}$ when the differential divided by the static pressure is an appreciable value or when h in inches of water divided by the absolute pressure in pounds per square inch is two or more; to use the coefficient derived for specific pressure taps to deduce the coefficient at any other set of pressure taps; to compare our coefficients of quantity with the coefficients of other investigators; and to determine various and sundry small thing which might cause inaccuracies in gas measurement through a thin plate orifice.

Coefficient of Discharge

To determine accurately the coefficients for the two sets of taps generally accepted as standards, we decided to use as our orifice meter a brass pipe, inside diameter 2.068", 12' long with a flange in the center. The flange was recessed so that it centered the orifices perfectly Pressure connections were made 1 D upstream from orifice as K_1, .5 D downstream from orifice, K, and 8 D downstream from orifice, K_3. Hereafter known as K_1 K_2 K_3 respectively. Care was taken not to leave burs or projections in the pipe at pressure connections and to see that their distance from orifice were exact functions of the inside diameter of the pipe. Our U tubes were connected between K_1 and H_2 and K_3.

Orifice Disks

Thirty orifice disks were made of steel .03 thick ranging in size from .265" to $\frac{d}{D}$ 1.551 giving ratios of $\frac{d}{D}$ from .128 to .75 in regular steps. Special care was taken to see that the upstream edges of these disks were smooth and sharp.

For our standard volume we used a drum of 105.999 cubic feet.

Method of Calibrating

We calibrated our drum by water displacement, using a small accurately calibrated galvanized iron container. Temperatures of each container were taken and the volumes reduced to an equivalent volume of water at the temperature of the water in the drum when full.

We checked our calibration three times and then pumped the drum full of gas and discharged it through a precision positive meter from 150 lbs. to 130 lbs., 50 lbs. to 40 lbs. and 20 lbs. to 10 lbs. and checked the volumes against Boyles Law deductions, after which we ran a three weeks' leakage test.

Procedure in Running Tests

A blocked dead weight tester was used to start and stop test. The temperature of the gas in the drum was taken with a thermometer in direct contact with the gas through a stuffing box.

1. The drum was pumped up to a pressure in excess of the desired starting P.

2. Manifold valves were regulated to give 4" of water differential across the taps $K_{1\,2}$.

3. When the dead weight tester weights left the block the watches were started and temperatures read.

4. The test was stopped in same manner as started.

5. Temperatures and humidity of the flowing gas through the orifice were recorded at the middle of the test.

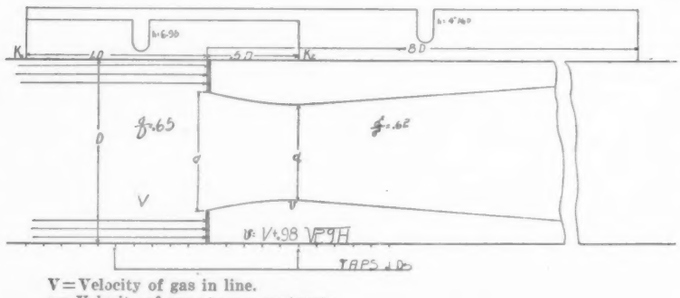
6. Q_1=Volume of gas at start deduced from P. T. and volume of drum reduced to 14.4 and 60° F.

Q_2=Volume of gas at stop of test determined in the same manner.

Qa=Volume passed the orifice=Q_1 Q_2

7. Theoretical volume passed the orifice deduced from Q=CN$\sqrt{hp}$ (this was also reduced to volume at 14.4 lbs. and 60° F).

8. The (C) coefficient of discharge was computed from $\frac{Qa}{Qc}$.



V=Velocity of gas in line.
v=Velocity of gas at vena contracta
D=Diameter of line.
d=Diameter of orifice.
dv=Diameter at vena contracta.
h=Difference in pressure across orifice in inches of water.
H=Difference in pressure across orifice in feet of flowing fluid.
K_1=Pressure tap at normal flow upstream.
K_2=Pressure tap at vena contracta.
K_3=Pressure tap at normal flow downstream.
a=Area orifice in square feet.
A=Area of flowing stream square feet.
Q=Passing orifice per second cubic feet=
vA=(V+.98$\sqrt{2gH}$).62a=For above $K_{1\,2}$=675A$\sqrt{2gH}$
$K_{1\,3}$=.890A$\sqrt{2gH}$
For any set of taps $C_1\sqrt{h_1}=C_2\sqrt{h_2}$, therefore, $C_1=C_2\sqrt{\frac{h2}{h_1}}$

Case Two

To determine the error introduced by using the hydraulic formula v=e$\sqrt{2gh}$ when the differential divided by the static pressure is an appreciable value or when h in inches of water divided by pressure in pounds per square inch absolute is 2 or more.

These tests were run with the same equipment as the first case and in the same way except in this case we varied the differential from 4" to 446" giving $\frac{h}{P}$ as a ratio of $\frac{h}{P}$ for $K_{1\,2}$ from $\frac{4}{14.6}$ .274 to $\frac{448}{28.9}$ 15.4 representing errors in measurement from practically 0 to 18%.

As a specific example assume a differential of 20" and pressure P_1 14.4 lbs. P_2 13.68 lbs.—

	Ratio	Error
$\frac{20"}{14.4}$ lbs.	1.39	1.8% plus
$\frac{20"}{13.68}$ lbs.	1.44	1.16% minus

Second, assume a differential of 20" and a vacuum of 26" or a pressure of 1.63 lbs. at K_1 and .908 lbs. at K_2. We would have $\frac{20"}{1.63}$ lbs. 12.5 ratio and an error of 13.6% with pressure taken upstream (measurement high) $\frac{20"}{.908}$ 22 ratio taken downstream (measurement low). Therefore, with the same meter measuring gas the difference in calculated quantity as is, pressure taps upstream and down would be 30.3%.

It has been suggested that probably the proper pressure to use was the average of the up and downstream, but this will not hold for all sets of taps.

The error mentioned above was caused by assuming that the pressure at K_1 or K_2 represents the pressure on the flowing gas. The flow can be found from the formula $P=\left|\frac{Va\sqrt{T}}{Ch\ 218.395}\right|^2$ when C is known assuming the pressure of volume reduction and pressure of inches of water to feet of air reduction to be the same.

Case Three

To use the coefficients so derived at specific pressure taps to deduce coefficients at other pressure taps. Knowing the coefficient for any set of taps.

The C for any other set of taps may be found if we know the relative differentials of the two sets of taps.

C_1=Coefficient known.

C_2=Coefficient sought.

h_1=Differential across taps where C is known.

h_2=Relative differential across taps where C is sought.

$C_2\sqrt{h_2}=C_1\sqrt{h_1}$

$C_2\sqrt{h_1}$ and $C_2=C_1\sqrt{\frac{h_1}{h_2}}$

We ran a traverse of a set up to show the relative differential of all possible

(Continued on Page 86)

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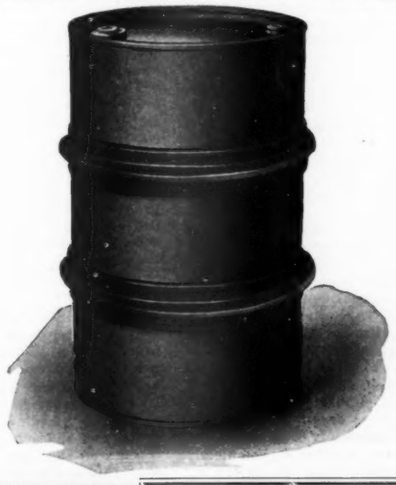

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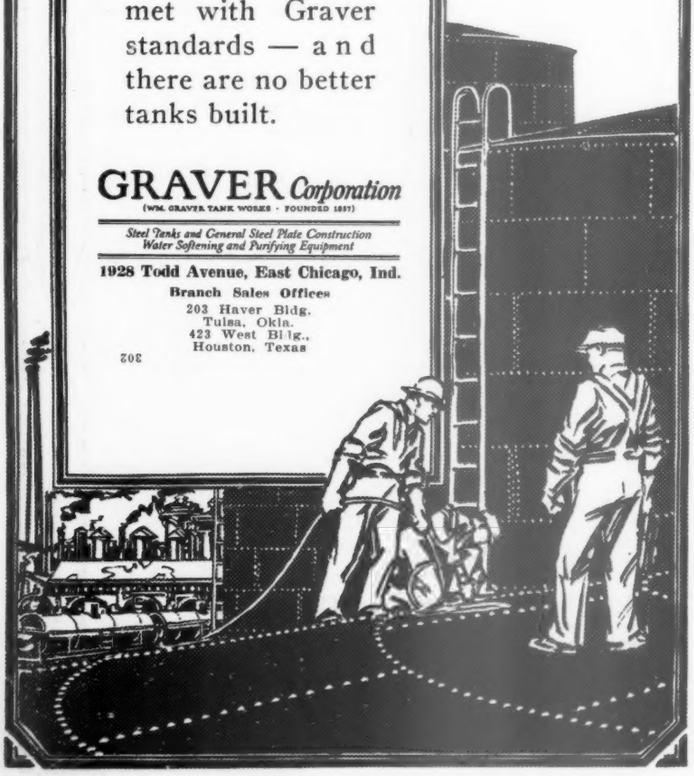


CHICAGO REFINED MARKET UNSETTLED

Crude and Tank Wagon Price Reductions Result in Refiners and Marketers Marking Time Until Conditions Adjust Themselves. Kerosene Shows Signs of Strength. Railroads Expected to Buy More Fuel Oil

By J. B. Waldo

CHICAGO, Nov. 12.—There has been no end of talk of declines in crude and tank wagon markets, but there has been a sort of last hope that there would be no changes. Oil men have said that there would have to be just such declines as have been announced before the situation could be adjusted, and now that these have come they are, as one oil man said, "going to roar" about it.

There have been other matters of possibly more importance to the industry on the long run than an adjustment of prices for crude petroleum and refined products to the prevailing conditions of supply and demand. Among them have been such matters as the visit of Hugo Stinnes, Jr., to this city on his way to the oil fields of the Southwest. Mr. Stinnes came to Chicago as the guest of Harry Sinclair and his presence was denied to all seekers for an expression from the representative of the German industrial magnate. A representative of Mr. Sinclair, in fact the attorney for the Sinclair organization, said that the Sinclair interests had had business relations with the Stinnes concerns in Germany as sellers and buyers and that its representatives had always been most hospitably treated by the Stinnes management and that the courtesies given to Hugo Stinnes, Jr., as the representative of his father's interests was simply in repayment of such social favors extended to the Sinclair representatives.

But there is no doubt that the majority of the oil men believe that there is more back of this visit than a mere exchange of courtesies. Just what this may be is a question that is being debated, but should it indicate the more active participation of the Stinnes industrial organization in the petroleum industry of this country it would simply add another financially strong factor to the present complex situation.

Another fact that leaked out and has been confirmed sufficiently to leave no doubt that the report is true is that the Royal Dutch interests have deposited in a Chicago bank not less than $5,000,000. Again rumors are current of further mergers, naming about every important organization except the Standard group as possible candidates for the possession of some part of this cash. If, as some suggest, it is to be employed for the acquisition of more distributing branches in the Middle West it would mean probably the adding to the present list of oil stations controlled by the Royal Dutch subsidiaries a sufficient number to make the number of their stations, bulk and filling, equal to those owned by the Standard Oil Co. (Ind.). It is quite generally believed here that the Royal Dutch interests were negotiating for the control of the Producers & Refiners Corp.—and certain facts are named as corroborative of this—and if this were the case, the purchase of the stock interests sufficient to control that organization by the Prairie Oil & Gas Co. would be explained to a degree, as the Standard Oil Co. (Ind.) is prohibited by the decree of dissolution of the United States Supreme Court in 1911 from acquiring competing organizations.

Markets Completely Unsettled

The market for gasoline is completely upset and the refiners and marketers are awaiting the moves of the trade until they get some sort of an adjustment to the new conditions. The reduction in crude, if it had not been followed by a reduction in the refiner's prices, was looked upon as a good thing for the refiner. One refiner stated that if he could get his crude at the new prices of 75 cents, $1 and $1.25 he would be about able to break even with New Navy gasoline selling at 6½ to 6¾ cents and other products on the same scale. He was more hopeful than for some time, but before the crude reduction had been more than fairly understood, Group 3 refiners were offering New Navy at 6¼ cents and buyers were holding off for 6 cents. These buyers now expect that they will get a 5½-cent market during the coming week.

Apparently the reductions in crude were made with the expectation that the low prices would restrict the production and the succeeding decline in tank wagon prices is expected to materially affect the activity of refiners. The general opinion seems to be that present prices will hold until the seasonal increase in buying comes with Spring. Consumption should be increased by the lower prices. Although the cost of fuel is the least expense of a motorist, it seems to be the expense of which he thinks the most. This lower price for gasoline should stimulate the use of cars and further increases in the number owned by the general public. It will be an added sales point with the seller of automobiles. With the increase in buying of gasoline previous to the opening of the touring season, which may come some time in June, it is expected that the gasoline tank wagon prices will advance and that by midsummer there will be a very different complexion to the petroleum industry. The stock market is a pretty good indication, and a very shrewd trader in stocks who has made a specialty of oil investments believes that the present prices will prevail on the principal securities with minor and unimportant changes, both up and down, until the middle of the next touring season and that then there will be a general and strong advance of the securities of the established petroleum organizations to much higher levels.

Prices Unsettled, Too.

The price situation has yet to be settled. Contracts which are regulated by the general tank wagon prices will show a decline and it would be natural for the spot market to follow. If it does not there will be little spot business done for the number of jobbers without some kind of a contract is small. Before the reduction in the tank wagon market the average marginal contract gasoline was selling at the same price as the spot gasoline. Here in Chicago a jobber with a 4½-cent marginal contract was getting his New Navy at a trifle over 6½ cents, and it was this fact as much as anything else that held the spot market for that refined product at a 6½-cent basis. If this rule continues to apply, it is not a pleasant thought for the refiner at what price he will have to sell his gasoline, but it means a further decline in the general market unless the number of refiners who are selling in the spot market is materially decreased by the stoppage of operations.

It is pointed out by some oil men that the price of crude has declined practically $1.25 since the tank wagon price was 20 cents. This should mean, according to the trade axiom that every 25 cents change in crude calls for a cent change in gasoline, a decline of but 5 cents, and the actual reduction has been 8 cents on gasoline. These oil men claim that this decline in gasoline is excessive unless there is at least a decline of 75 cents more in crude, and this would leave crude at nothing at all to 50 cents for the gravities above 40 degrees. It would

(Continued on Page 120)

If You Use

Commercial Flour Sulphur

We can supply you to your advantage
Write us concerning your requirements

Texas Gulf Sulphur Company

(Incorporated)

General Offices
41 East 42 Street, New York

Sulphur Deposit and Plant
Gulf, Matagorda County, Texas

Here is Increased Strength

Note the specifications of this Powerful and Ruggedly Constructed Break-out Wrench.

1. The jaws are fastened with a special through bolt and nut. The advantages gained by this construction over the old pin and hollow cap construction are:

Increased Strength—Fewer Parts—Jaws Can't Spread—the bolt is of extra size and carries S. A. E. standard threads, because being finer, they provide greater bearing for a nut of given thickness than do U. S. standard threads. The bolt is so strong that a strain sufficient to rupture the chain and swinging link has no effect whatsoever upon it.

In addition:

The swinging link on center bolt is forged from high-grade Chrome Vanadium Steel and is heat-treated.

Each link of chain is proof tested to two-thirds its guaranteed strength. Handle is especially heat-treated; it will not break, it will bend first.

All Vulcans are interchangeable with cable or flat links.

The Vulcan is the last work in break-out service.

J. H. Williams & Co.
Brooklyn Buffalo Chicago

Bolt and Nut Construction

WILLIAMS
SUPERIOR DROP-FORGED TOOLS

"MAUD"
BREAK-OUT WRENCH

SO the industry may be served promptly in any crisis, P.I.W. invests a fortune in steel plates. And many times in the face of a rising market, its customers have shared the saving made possible by this courage and foresight.

P. I.W. is big enough to do these things, and yet human enough to pass them along.

Wire or write for prompt shipments of tankage and equipment.

"P. I. W. Service Is World Wide"

THE PETROLEUM IRON WORKS COMPANY

SHARON, PA.

New York St. Louis Houston Casper Tulsa San Francisco

THIN PLATE ORIFICE MEASUREMENT OF GAS

(Continued from Page 82)

sets of taps at all orifice ratios. Connecting our known C_1 through the formula

$$C_2 = C_1 \left| \frac{\sqrt{h_1}}{h_2} \right.$$

we are able to get the coefficient of any set of taps, as compared with our coefficient.

Precautions in measuring gas.

1. See that the disk is perfectly round and the upstream edge is sharp. I think the idea is general that when an orifice disk becomes salted up and dirty on the inside and edge that the measurement is raised due to the smaller opening, but almost invariably the increase in the coefficient more than offsets the error due to the area of disk being smaller, causing an undermeasurement, when a disk is dirty.

2. See that the orifice is centered in the line. When disks are not centered you get into excentric or segmental flow conditions. See Horace Judd's Bulletin (American Society of Menchanical Engineers).

3. Care should be taken that no burs are left on the inside of the pipe when the pressure connections are made.

4. Do not throttle the lines leading to the recording U tube or meter, any throttling should be done under the mercury and care should be taken when done here to make the approach on each side of the throttle similar so that the C of flow in one direction will be the same as the C of the flow in the other direction. This is especially necessary when pulsations are present..

5. See that the ratio of the thickness of the orifice to its inside diameter is small.

Conclusion

I believe orifice measurements can be expected to give accurate results (within 2%) where the proper precautions are observed.

There is no difference in the characteristic of the flow curves for water and gas and seems to be no difference in the coefficient for water and gas.

I see no reasons why the hydraulic formula should not be used altogether with proper corrections. The thermodynamic formula probably is more nearly uniform under variable conditions, but it has varying coefficients, so why mix two methods where one can be used as is or be corrected?

I have a family of curves for different differentials on a travers reduced to a standard differential between 1-5D for water and gas which shows that there is a constant relation between the differentials at different taps and that this relation holds at varying differentials for both water and gas and that the water and gas curves coincide at all combinations of taps when reduced to unity at 1-5D.

Specifications

Specifications for orifice meter computations. Symbols which will be used throughout:

Q=Cubic feet of gas per hour at T_1 P_1 or at T_2 P2.
A=Affective area of flowing stream in square feet.
a=Area of orifice in square feet.
C=Coefficient of contraction, friction, etc. (Vc of Eff.)
d=Diameter of orifice in inches.
D=Diameter of pipe in inches.
V=Velocity of the flowing fluid feet per hour.
g=Acceleration of gravity at L and E.
H=Differential across orifice in feet of flowing fluid.
h=Differential across orifice in inches of water at 60° F.
P=Absolute pressure of flowing fluid pounds per square inch.
P_2=Absolute pressure base or (reference pressure).
p=Atmospheric pressure absolute pounds per square inch.
T_1=Absolute temperature of flowing fluid
T_2=Asbolute temperature base or (reference temperature).
L=Average latitude of the field in which the gas is measured.
E=Average elevation above sea level of the field in which the gas is measured,
G=Specific gravity of gas flowing. (Compared to air at 14.4 lbs. and 60°F.)

$$X = \frac{d}{D}$$

:=The sign of multiplication.

Measuring Gas in the Osage Nation

Assumptions in figuring hourly gas coefficients to be used with orifice meters.

C. For Foxboro orifice meters where differential taps are taken 1" upstream from face of orifice disk and 1" from downstream face of orifice disk and pressure connection taken from downstream connection, is found from this formula:

$C = .606 + 1.25 \quad (X - .41)^2$. Where X=.41 or more.

For any value of X below .41, C is equal to a constant .606 (by Weymouth).

C. For Wescott orifice meters when differential taps are taken 2.5 pipe diameters above upstream face of orifice disk, and downstream connection is made 8 pipe diameters below upstream face of disk. Pressure connection taken at upstream tap.

C is found from this formula:

$C = (.58925 + .2725X - .825X^2 + 1.75\ X^3)$

1 cu. ft. water at 60° F. weighs 62.37 lbs.
1 cu. ft. air at 14.4 lbs. and 60° F. weighs .0748378 lbs.

Therefore, $\frac{62.37}{.0748378} = 833.40237$ feet of air at 14.4 and 60°F. to equal in weight 1 foot of water at 60°F.

Therefore, 1" of water $= \frac{833.40237}{12}$

= (69.45019 feet of air at 14.4 lbs. and 60°F. to equal in weight 1" of water at 60°F.

g=(By Pierce's formula) $\frac{32.0894}{1 + .0052375 \sin^2 L)(1 - .0000000957E)}$

L=36° 45" N. Latitude, which is considered the average for the Osage.

E=1,000 Ft. above sea level, (considered average elevation for Osage).

g=32.1465.

p=14.4 lbs. per square inch absolute.

P_2=10 oz. above atmospheric pressure or 15.025 lbs. per square inch abs. Considering the average atmospheric pressure to be 14.4.

T_1=60°F. or 519.6° abs. F.

T_2=60°F. or 519.6° abs. F.

Showing all figures used in deduction of Air and Gas Constant to be used in the Osage:

$Q = A\ V.$

$A = a\ C.$

$a = \frac{3.1416\ d^2}{4 : 144}$

$V = 3600\ \sqrt{2 : 32.1465\ H}$

$H = h\ 69.45019\ \frac{14.4}{P_1}\ \frac{T_1}{519.6}$

$V = 3600 \sqrt{2 : 32.1465\ h\ 69.45019\ \frac{14.4}{P_1}\ \frac{T_1}{519.6}}$

$Q = \left(\frac{3.1416\ d^2}{4 : 144}\right) \left(3600\ C \sqrt{2 : 32.1465\ h\ 69.45019\ \frac{14.4}{P_1}\ \frac{T_1}{519.6}}\right)$

Simplifying, we get:

$Q = 218.422\ Cd^2 \sqrt{h\ \frac{T_1}{P_1}}$

To reduce Q to any desired P_2 or T2, we introduce $\frac{T_2}{P_2}\ \frac{P_1}{T_1}$

$Q = 218.422\ \frac{T_2}{P_2}\ \frac{P_1}{T_1}\ Cd^2 \sqrt{h\ \frac{T_1}{P_1}}$

Canceling $\frac{P_1}{T_1}$ we have

$Q = 218.422\ \frac{T_2}{P_2}\ C\ d^2 \sqrt{h\ \frac{P_1}{T_1}}$

Considering T_2 and T_1 60° F. or 519.6 Abs. F°, we have

$Q = 218.422 \sqrt{\frac{519.6}{P_2}}\ Cd^2 \sqrt{h\ P_1}$

$Q = \frac{4978.872045014}{P_2}\ Cd^2 \sqrt{h\ P_1}$

Gravity of Gas 1

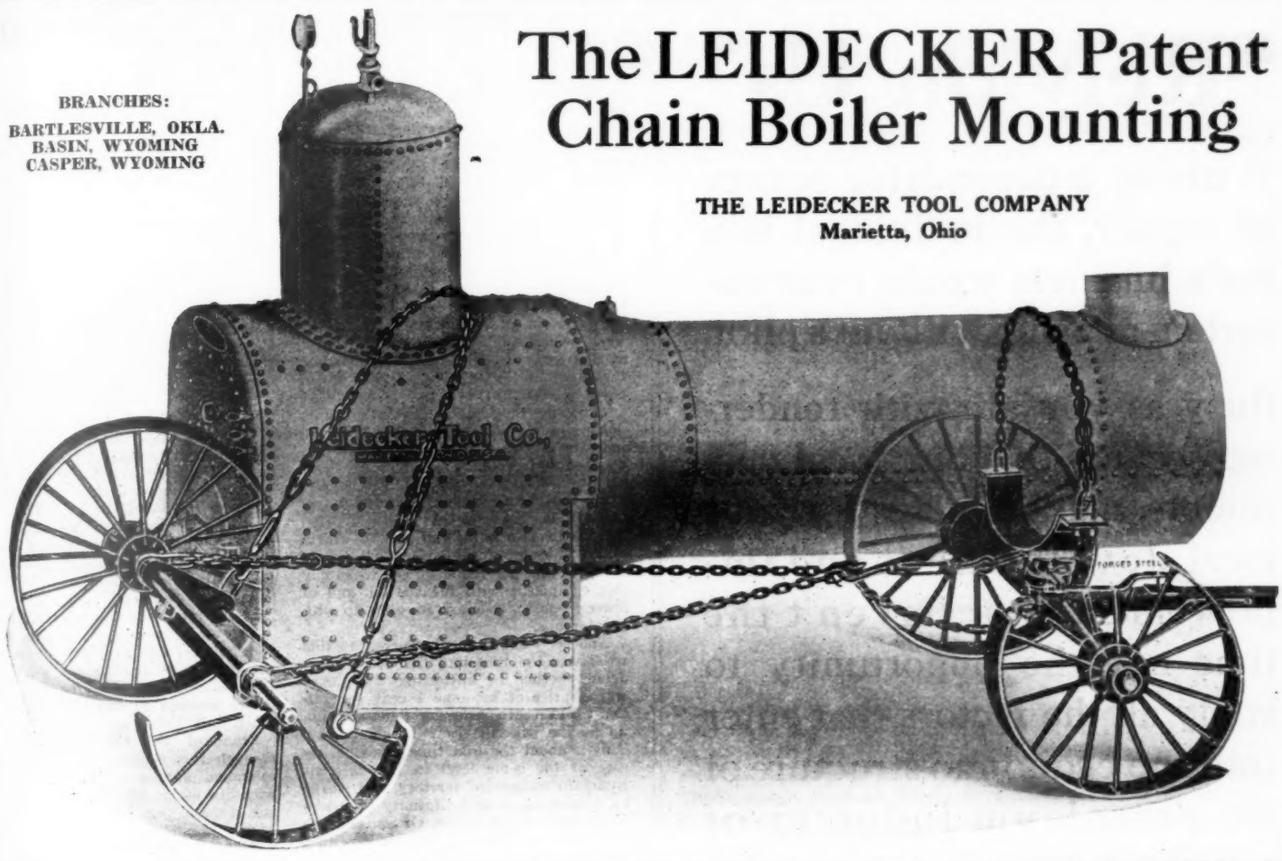
Pressure base of 0 oz.=14.4 lbs. Abs.
$Q = 345.755\ Cd^2 \sqrt{h\ P_1}$
Pressure base of 4 oz. =14.65 lbs. Abs.
$Q = 339.855\ Cd^2 \sqrt{h\ P_1}$
Pressure base of 6 oz. =14.775 lbs. Abs.
$Q = 336.979\ Cd^2 \sqrt{h\ P_1}$
Pressure base of 8 oz.=14.9 lbs. Abs.
$Q = 334.152\ Cd^2 \sqrt{h\ P_1}$
Pressure base of 10 oz=15.025 lbs. Abs.
$Q = 331.373\ Cd^2 \sqrt{h\ P_1}$
Pressure base of 1 lb.=15.4 lbs. Abs.
$Q = 323.303\ Cd^2 \sqrt{h\ P_1}$

(Continued on Page 90)

The LEIDECKER Patent Chain Boiler Mounting

BRANCHES:
BARTLESVILLE, OKLA.
BASIN, WYOMING
CASPER, WYOMING

THE LEIDECKER TOOL COMPANY
Marietta, Ohio



"The Valve With a Leg to Stand On"

Any Size = Any Pressure

Good Pipe Line Construction Includes Westcott Valves

Manufactured By **Westcott Valve Company, Inc.** Seneca Falls N. Y.

"Rely on Us"

Without a dependable source of supply, the individual jobber's business would be as uncertain as a ship without a pilot.

Busy as you are with rendering service to your local customers, making plans for your local development and improvement, you haven't the time nor the opportunity to study all the factors that enter into the economic structure of the petroleum industry of which your business is a part.

It is on a study of these factors that intelligent buying is done. Your marketer should be an adviser on when to contract and when to wait. Your marketer should be able to say, "Rely on us."

The position of this organization has been so firmly established that it only remains for jobbers not using Taxman Service to send us their next inquiry.

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GASOLINE WEAKER IN THE EAST; UNIFORMITY IN KEROSENE PRICE

By N. O. Fanning

NEW YORK, Nov. 12.—Weakness in the gasoline market is the feature of the eastern refined oil situation at present. Although the general tank wagon price is 16½ cents, offerings of Mid-Continent gasoline were reported below 10 cents per gallon. This was a small quantity, and does not reflect conditions throughout the territory, but nevertheless all indications now point to lower prices for gasoline throughout the Atlantic Seaboard before winter is over. In some quarters Gulf Oil Corp. is expected to take the initiative in a 2 cent reduction next week, which would bring the tank wagon market down to 14½ cents in most of the territory, but 13½ cents in certain portions of it.

However the gasoline situation does not represent any new situation in the industry, and, as stated in previous letters, eastern refiners are paying more attention just now to burning oils, and particularly furnace oil. One manufacturer of home oil burners has sold 8,000 installations to date, and several others report sales up into the thousands. It is up to the big refiners here to supply this equipment with furnace oil, and in order to do so, they are stocking up with heavier oils.

Another important occurrence this week was the Standard Oil Co. of New Jersey action in advancing the tank wagon price of kerosene 1 cent per gallon to 14 cents, bringing the quotation up in line with the New York territory. This is about the first time kerosene has sold at the same level in the different Standard companies' terrtory, and marks an almost complete uniformity in prices along the Atlantic Coast. Of course there are many variations in the smaller cities, but the general structure is now quite uniform.

Uniformity Healthy Factor

There has been much complaint on the part of consumers of both gasoline and kerosene in recent years, throughout the Atlantic Seaboard, because prices in different States were not uniform. Often consumers in one State could get gasoline 2 or even 3 cents lower by crossing the border into another State. These differences were due largely to the variance in transportation charges on oil from the particular refineries which supplied the territory. At present, however, competition from companies with refineries on the Gulf Coast, which are able to supply any point on the Atlantic Seaboard at about the same price levels, has helped toward uniformity.

The advisability of uniform price schedules on refined products in adjoining States, so far as is compatible with economic operation, is evident. In fact this, together with the lowering of gasoline prices, is rapidly changing the general sentiment on the part of the "public" toward the oil industry, and changing it for the better.

Lubricant Demand Gains

The market for lubricants throughout this territory has been stimulated of late by increased industrial activity and the holding up of automobile consumption, so that this product appears to be in a fairly strong position. Offerings of lubricants are increasing, yet prices have remained about unchanged. The balance between demand and supply seems to be well held.

Standard Oil's Crude Contracts

Of considerable moment was the report that the Standard Oil Co. of New Jersey had about closed a contract for 30,000,000 barrels of Panuco crude oil with the Mexican Seaboard Oil Co. This report is generally credited in oil circles, inasmuch as the Seaboard concern has just about finished supplying the Jersey company with oil on its old contract, which called for 45,000,000 barrels. In fact that contract ends this month.

The new price schedule for the 30,000,000 barrels will probably be about 50 per cent under that on the old contract. It is believed that the price will be somewhere between 40 and 50 cents per barrel, f. o. b. Tampico.

Standard Oil Co. of New Jersey, through this contract, will have a vast command of heavy crude oil, together with its other sources. Humble Oil is one of the biggest producers in the Powell Field; in addition, Carter Oil is a big producer in the Mid-Continent, and the Standard Oil Co. of New Jersey is also continuing its takings of California oil.

In view of the Jersey company's apparent anxiety to assure itself ample crude supplies in Mexico, it is believed the interests behind the company's policy are preparing for a decline in California's output.

Receipts of Oil Larger

Receipts of crude and refined oil at Atlantic Coast ports during the week ended November 9, averaged 484,000 barrels daily, against 413,000 barrels the preceding week. The feature of the movement was the gain in receipts from the Gulf Coast district.

The following table shows estimated daily average receipts of crude and refined oil by water at the principal Atlantic Coast ports for the last two weeks, and for the months of October and September (in barrels):

	Week Ended		Month	
	Nov. 9	Nov. 2	Oct.	Sept.
New York	344,000	178,000	236,000	192,000
Philadelphia	76,000	83,000	109,000	76,000
Baltimore	16,000	21,000	41 000	59,000
Boston	21,000	21,000	26,000	32,000
Fall River	.....	19,000	18,000	15,000
Providence	11,000	17,000	17,000	21,000
Norfolk	.....	19,000	9,000	8,000
Charleston	.....	.....	11,000	2,000
Miscellaneous	16,000	55,000	31,000	23,000
Total daily average	484,000	413 000	498,000	420,000

New York's receipts, averaging 344,000 barrels daily, are the largest on record, but their total was partly offset by declines at the smaller ports.

PINCHOT PROBES GASOLINE

OMAHA, Neb., Nov. 12. — Governor Pinchot of Pennsylvania is investigating the coal and gasoline selling system in Nebraska, which, it is maintained, has substantially reduced retail prices of fuel and gasoline in this State.

The Pennsylvania governor has written to Governor Bryan of Nebraska asking for the details of the plan, and the results attained. He also wants to know about Governor Bryan's law enforcement system.

"I have been watching your coal and gasoline campaign and I want to know the details," says the letter. "Also I heard of the good results of your law enforcement system with interest."

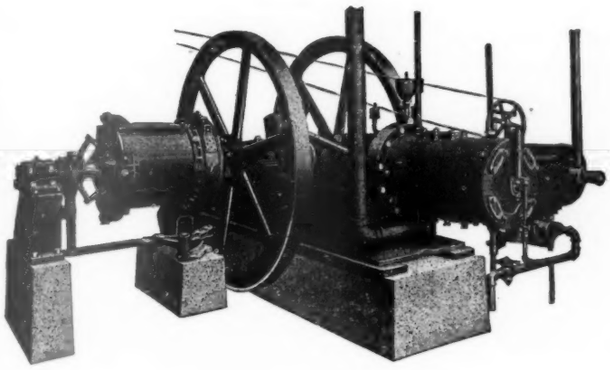
Governor Bryan will give the Pennsylvania governor all the details asked for.

INSTALLING FIRE SYSTEM

The Central Petroleum Corp. of Los Angeles, Calif., is installing the Foamite System on the Athens tank farm. Contracts for the necessary ditching and excavating have been awarded to the J. R. Kelley Co. of Los Angeles.

A REID 25 HP GAS ENGINE

Located Near Tulsa, Oklahoma, is Handling



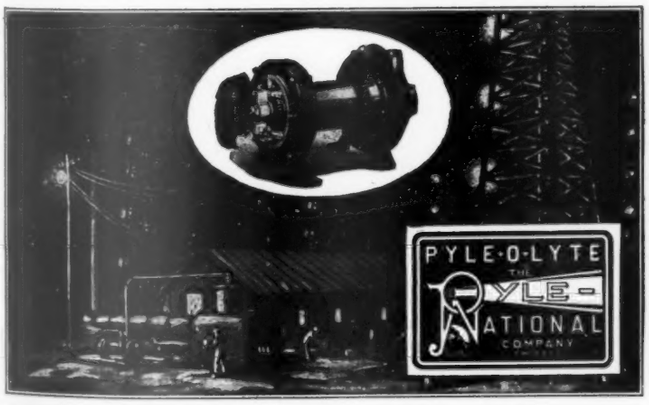
2106 feet deep.
5 3-16″ casing for tubing.
⅞″ rods.
Counterbalanced Beam.
Speed of Engine 157-159 R.P.M.
30″ Stroke.
24-25 Strokes per minute.
Handling 105 barrels of fluid per hour.
Standard Reverse Clutch.
18″ Pulley.
12″ 6-ply Belt.

Reid Engines the Choice for Heavy Difficult Jobs

BRANCHES AND AGENCIES:

Marietta, Ohio; Logan, Ohio; Newark, Ohio; Fort Recovery, Ohio; Haynesville, La.; Shreveport, La.; Charleston, W. Va.; R. B. Moore, Bolivar, N. Y.; Bradford Supply Co., Robinson, Ill.; Frick & Lindsay Co., Kentucky Distributors; S. R. Shoup, 408 Pacific Electric Bldg., Los Angeles, Calif.; Oklahoma, Kansas, Texas, Arkansas and Wyoming; Frick-Reid Supply Co., Tulsa, Okla., and branches. Branch Shop: Tulsa, Okla.

The TURBO-GENERATOR *That Simplifies Oil Well Lighting*



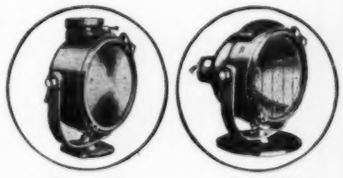
THE location of oil wells makes necessary easily portable individual lighting equipment. Two other things are necessary—sufficient light, and a certainty of its continual presence. Better light means better and more work, more satisfied workmen, quicker construction and better operation.

To provide the greatest flood of light and to make it always sure, the Pyle-National Type E 110-Volt Turbo-Generator with a capacity up to 1,500 watts has been developed to the point where it is the choice in oil fields whenever a comparison is made.

To be positively sure that the Turbo-Generator is always at the height of its efficiency, the Pyle-National Company maintains **a field service** that is at the command of all users.

The purchase of a Pyle-National Turbo-Generator and Lighting Equipment insures steady light of high power. The field service is insurance that it will continue to function in the highest degree.

PYLE-O-LYTES



Type 1460 *Type 1443*

Type 1045
PYLE-O-LYTE

Send for the booklet, "The Pyle-National Steam Turbo-Generators for the Oil Industry," and Catalog No. 4, descriptive of PYLE-O-LYTES, the Superfloodlight, and learn more about these necessary adjuncts of every oil well—how you may be independent of all other sources of lighting, and how you may be sure that work will never be interrupted for lack of proper lighting.

Do it today!

THE PYLE-NATIONAL COMPANY, CHICAGO

Truck Tanks
for all
1 and 1½ ton trucks

Leader-built truck tanks are so designed that they will withstand the jolts and jars encountered on rough streets and roads.

All seams are strictly welded, there being no joint on side or bottom the full length of the tank. The heads on these tanks are reinforced with a heavy section of angle iron which prevents possibility of deflection in compartment heads.

Leader builds truck tanks on the basis of quality which stands for economy to the user.

The Leader-built standard truck tanks range in capacities from 300 to 1,000 gallons with compartment from one to four in either elliptical or rectangular types; bucket box built in or built separate from tank.

Prices will be sent you upon application.

Leader "Safety First" air tanks satisfy both law and users. Accidents are expensive. Why take chances? Leader standard of air tank construction will not be lowered below the safety mark, even though the customer agrees to be responsible.

LEADER IRON WORKS

Plant: Decatur, Illinois

Offices: CHICAGO, 327 S. La Salle St., NEW YORK, 21 E. 40th St.

"Tanks you can Leader *buy—and forget"*

THIN PLATE ORIFICE MEASUREMENT OF GAS

(Continued from Page 86)

Pressure base of 2 lbs.=16.4 lbs. Abs.

$$Q=303.590\ Cd^2\sqrt{h\ P_1}$$

To get Gas Constant divide air constant by the square root of the gravity of gas.

The inside diameter of standard pipe used in orifice meter settings, as a rule, is as follows:

D for 4" pipe= 4.026.
D for 6" pipe= 6.065.
D for 8" pipe= 8.071.
D for 10" pipe=10.191.
D for 12" pipe=12.000.

Please note on meter setting reports if other than standard pipe is used giving inside diameter, weight, etc.

In reporting size of orifice please give nearest standard size with the actual micrometer of orifice to 1 inch.
1,000

Special

For taps 2.5 and 8 diameters with 10 oz. pressure base the one hour gas coefficient is derived from this formula:

$$\frac{331.373\ d^2\ (.58925+.2725X-.825X^2+1.75X^3)}{\sqrt{\text{Specific gravity of the gas}}}$$

For taps 1" and 1" with 10 oz. pressure base the one hour gas coefficient is derived from this formula:

$$\frac{331.373\ d^2\ [.606+1.25\ (X-.41)^2]}{\sqrt{\text{Specific gravity of the gas}}}$$

TWENTY LISTED OIL SECURITIES HAVE DECLINED OVER BILLION

Twenty listed oil stocks, at their recent lows, were selling for $1,100,000,000 less than market values at their 1923 highs. The appended table from the Wall Street Journal of 20 listed oil stocks shows 1923 highs, recent lows, decline from year's high, and depreciation in dollars on common stock outstanding:

	1923 High	Recent Low	Decline	Depreciation in Val from High
Associated Oil	27⅛	24⅞	2⅛	$ 3,578,000
Atlantic Refining	160	101	59	29,500,000
California Pet.	29⅝	17¾	11⅝	8,080,000
Cosden & Co.	62¼	22⅞	39⅜	57,142,000
General Asphalt	54	25	29	5,764,000
Marland Oil	59⅝	17½	42⅛	58,109,000
Pacific Oil	48⅞	36	12⅞	45,062,500
Pan American Petroleum	93½	54	39½	39,561,000
Pan American Petroleum B	86	51	35	56,321,000
Phillips Petroleum	58⅛	17½	40⅝	30,020,000
Producers & Refiners	58⅛	17½	50⅝	30,020,000
Pure Oil	32	16⅝	15⅜	43,037,000
Royal Dutch	55½	47	8½	*5,469,000
Shell Union Oil	19¼	13⅜	5⅞	47,000,000
Simms Petroleum	16	8	8	5,386,000
Sinclair	39⅝	18⅛	21¼	95,453,000
Skelly Oil	35	14½	20½	16,875,000
S. O. of California	64⅛	50½	13⅝	132,396,000
S. O. of New Jersey	44¼	31½	12¾	253,678,000
The Texas Co.	52⅞	36½	16⅜	110,181,500
Total				$1,100,185,000

*On 673,134 New York shares.

INCREASED MILEAGE TO FOLLOW USE OF ANTI-KNOCK COMPOUND

By George A. Burrell
Consulting Chemical Engineer, Pittsburgh, Pa.

Ethyl gas is the name of gasoline, now being sold in Dayton and Cincinnati, Ohio, and other places which contains about .01 per cent of tetra-ethyl-lead, to prevent knocking in the engine. This is a discovery of Thomas Midgley, Jr., of the research laboratory of the General Motors Co., at Dayton, Ohio.

"Knocking" usually happens when the engine is laboring, particularly up a hill, with the throttle wide open. It arises from the formation of secondary detonable compounds which decompose and cause an abnormal rise in pressure. This tendency stands in the way of further raising the end point of gasoline without at the same time lowering the compression of the gasoline, because it is the high "end point" fuels which knock the worst upon compression.

Benzol is a good anti-knock substance and has long been known as such, but it takes a large amount of benzol to serve effectively, as much as 25 per cent or more, in gasoline. There is not enough benzol in the country to be of service in this respect. Therefore, the General Motors Co. made a long series of experiments to find a substance, only a small amount of which would be necessary, and which could be obtained in great enough quantity to treat a tremendous amount of gasoline. Tetra-ethyl-lead meets these requirements.

Each gallon of gasoline contains three cubic centimeters of tetra-ethyl-lead and two cubic centimeters of carbon tetrachloride. It was found that the tetra-ethyl-lead alone caused spark plugs to deteriorate rapidly due to the presence of lead and the oxidizing condition present in the combustion chamber. Adding the carbon tetrachloride provides something for the lead to unite with. The lead chloride formed readily passes out through the exhaust. "Ethyl gas" sells for 3 cents more per gallon than ordinary motor gasoline. It is wine colored.

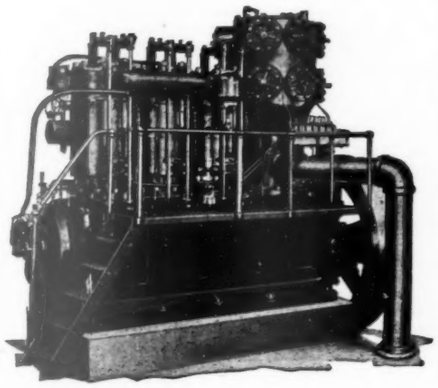
If the use of antiknock compounds become general so that higher compression motors can be built, it would almost double the mileage from a gallon of gasoline. Such a motor has been built and has been able to get 31.5 miles per gallon of gasoline, with a motor which otherwise gave 16 miles.

The scientific fraternity of this country have recognized Midgley's achievement as one of great merit, and he has been highly honored, accordingly. He has published several scientific papers within the past year describing his invention. He has been greatly aided in his development work by A. F. Kettering, chief of the research work at Dayton. The Standard Oil Co. of Indiana has taken over the sales rights for the new fuel in that territory served by it, and presumably other Standard Oil and other large oil companies will follow suit.

WHITE EAGLE CASPER PLANT

CASPER, Wyo., Nov. 10.—The White Eagle Oil & Refining Co. is now storing oil at its refinery under construction east of this city. The company has connected a crude line with the trunk line of the Producers & Refiners Corp. connecting with the Salt Creek and other Wyoming fields. The White Eagle plant will start operating about January 1.

The Reeves Vertical Gas Engine—Compressors For Gas Booster Plants



Engine Sizes:
40 H. P. up to 250 H. P.

Engine-Compressor Sizes:
60 H. P. up to 160 H. P.

A few of the reasons why leading companies and engineers are purchasing the Reeves Gas Engines and Compressors.

They know the Reeves unit is not an experiment, having proven its reliability and worth over a period of about twenty years successful service.

Account of the simplicity of operation; low fuel and maintenance cost per horse power. One user just reported having operated last four units 16 months without shutdown.

All Compressors equipped with "Hope" Biplane, Patented, easy operating, high speed Valves.

Saving in installation time partly pays for unit.

Saving in plant construction cost from 20 to 50%, depending on location.

Branches Pittsburgh, Penna. Tulsa, Okla. Casper, Wyo.

HOPE ENGINEERING & SUPPLY CO.
Mt. Vernon, Ohio, U.S.A.

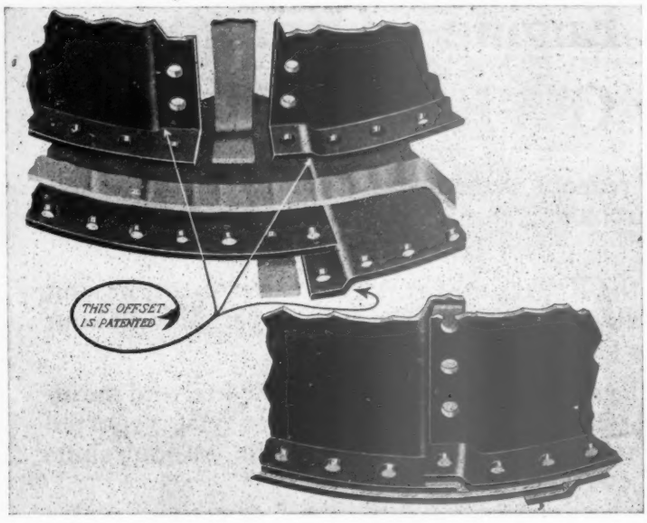
Consulting and Contracting Engineers in Natural Gas and Oil.

ONE reason for the popularity of The Star Portable Drilling Machine is the saving of time and expense of moving and rigging up. A Star will do for you what it does for others as told in our booklet "PROOF"—sent upon request.

S D M C O

The Star Drilling Machine Co.
Akron, Ohio

S D M C O



Patented October 21, 1913

GAS-TIGHT WITHOUT CALKING

Due to Patented Offsets

Note how the steel plates of MALONEY Tanks and the strips of gasket unite to give an EXACT, TIGHT fit at seams and joints, WITHOUT CALKING.

Where plates overlap the OFFSETS or crimps in their edges take care of extra thicknesses of metal and gasket. The parts fit together as ACCURATELY as the cylinder head and cylinder of a well constructed steam engine.

Without the offsets this exact fit would be impossible, and since these offsets are a patented feature the MALONEY may fairly be singled out as "the tank that FITS!"

Made of rust-resisting Keystone Copper Steel—vapor tight decks—packed-joint manholes—cleaning-out plates flush with bottoms—pressure vacuum valves. Catalog C gives full particulars.

MALONEY TANK MANUFACTURING CO.
Tulsa, U. S. A.

60 Bbls. to 3,000 Bbls., Inclusive

Prompt, Dependable Export Service

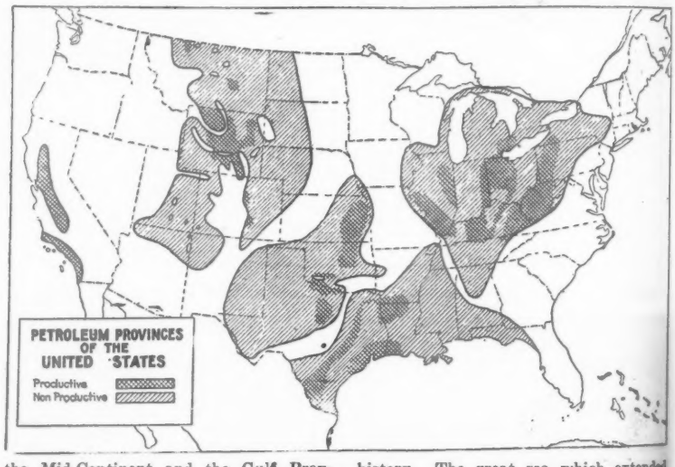
MALONEY PATENTED BOLTED COPPER-STEEL TANKS

MALONEY

FIVE GREAT OIL "PROVINCES" OF THE UNITED STATES MAPPED

The United States has five great oil "provinces," or groups of fields, shown on the accompanying map, presented by Ernest R. Lilley, assistant professor of geology in New York University, to illustrate an article on "Petroleum Provinces of the United States," contributed by him to The Engineering and Mining Journal-Press (New York.) Professor Lilley writes that our oil production comes from five definitely limited areas beyond whose borders prospectors will search in vain. The way in which oil men name the areas where oil or gas is to be found is regarded by Professor Lilley as confusing. "Fields," and "oil districts" are terms that have no distinct meaning, he says. In dividing our oil regions into "provinces," each composed of a connected or related group of "fields," he offers a distinct contribution to the simplification of oil terminology. He writes:

East of the Rocky Mountains 10 fields hold prominent positions in the oil industry. These group themselves in definite ways in three major units or provinces, which we may call the Eastern, the Mid-Continent and the Gulf Provinces. In the same way the fields of the West may be placed in two provinces, the Pacific and the Rocky Mountain.



Of the five areas mentioned, the Eastern is naturally the one most developed and in consequence the easiest to discuss. As one goes from east to west from the Appalachian ridges one passes through in rapid succession four distinct fields: the westward dipping Appalachian Field; the Cincinnati arch, with its axis approximately north and south; the narrow La Salle Field of eastern Illinois; and a group of isolated pools of minor importance in southwestern Illinois on the eastward dipping slopes from the poorly defined Ozark mass.

Between the area occupied by the four fields and the rest of the producing sections of the country there are, however, distinct barriers. Except in the Northwest, and in the Southwest, this area of oil bearing beds is completely surrounded by territory in which drilling would be equivalent to throwing away money.

To such wide areas apply the term "oil provinces." Such broad basins may not be oil bearing throughout, for though on one side the climatic conditions may be most suited to the growth of oil source life, those prevailing on the other side may be distinctly unfavorable.

The Mid-Continent basin, though not fully uncovered, seems to have had a general southwest to northeast direction, and to have occupied the trough between the Rockies and the Ozarks. Dividing it into two subbasins, which, however, remained connected, was a series of east-west ridges. Within the larger basin four fields are now developed in part. The first of these, the north Mid-Continent or Ozark west slope field, is the most important. To the north of the Wichitas lies a field which is largely undeveloped, but the south slope field is well known as the source of the production of southern Oklahoma and North Texas. Immediately south is the North-Central Texas Field. No commercial production has been secured from the southwest or western portions of the major basin.

The province is entirely distinct from the Gulf province whose producing beds were not laid down until periods much later than those of its neighbor. In sections where sediments, deposited during periods when its waters covered what are now coastal plains, are again above the level of the Gulf, four distinct fields have been discovered; the Stratum and the Dome Fields of Texas, southern Arkansas and Louisiana, the Tampico-Tuxpam area of eastern Mexico, and the Tehuantepec-Tabasco Field of southern Mexico.

The Rocky Mountain province contains beds which were formed during widely separated periods in the earth's history. The great sea which extended from northern New Mexico to Yukon Territory, and from western Kansas to eastern Utah, must have been in many places a series of connected seas rather than one large sea. In these small basins, whose development seems to have been greatest in Wyoming, the conditions appear to have been much more favorable to the formation of oil bearing sediment than in the broad open waters to the north and east. Already numerous pools have been located on the flanks of these regional synclines, the most productive of which are the Big Horn and the Powder River basins.

The Pacific epicontinental shelf province contains only two fields in the United States. These, though capable of further extension, do not appear to be forerunners of others of the same type along the Pacific Coast of the United States, although fields may be discovered in Alaska and Mexico.

No attempt is made to indicate the areas in which prospecting might be attempted with the greatest chance of success. Before such suggestions can be offered in any new region its general geology must be fully understood. The drilling of test wells on local structures 5 or 6 miles from a producing pool is a good business proposition, but the drilling of such wells hundreds of miles from any successful tests involves a chance altogether too great. The oil province is a definite limited area beyond the borders of which the prospector must not expect conditions prevailing within it to extend. Within the province further limits may be placed upon the areas suitable for testing, because of lack of porous containers and suitable structures or because of excessive carbonization.

BARTLESVILLE SUPPLY COMPANY

Manufacturers of the Famous

"BARSCO PRODUCTS"

Drive Shoes, Anchor and Casing Clamps, Male and Female Steel Nipples

Stocks carried by dealers for your convenience

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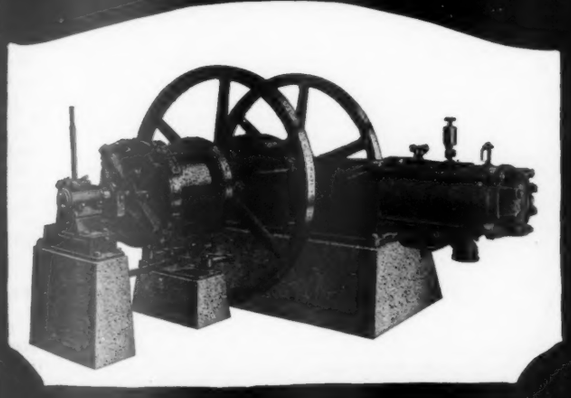
M. & F. Steel Nipple

FRANKLIN

VALVELESS GAS ENGINES

Have minimum parts. Require fewer adjustments. Eliminate valve grinding. Construction keeps out all sand and grit. Saves 75% in lubrication cost over other type engines.

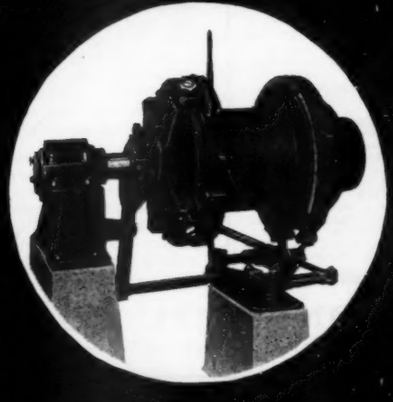


TYPE "S" REVERSIBLE CLUTCH

A strong, reliable, self-oiling, quiet running clutch, requiring little or no attention after once installed.

Well constructed—all parts are interchangeable. Lubrication of pulley, bushings and gears automatic and positive in action.

There is no better clutch made for oil field service than the FRANKLIN type "S".



Descriptive bulletins on request

FRANKLIN VALVELESS ENGINE COMPANY

FRANKLIN PA.

Distributed in Oklahoma, Kansas, Texas, Louisiana and Arkansas by
ATLAS SUPPLY CO., Muskogee, Oklahoma, and Branches

Distributed in Ohio and West Virginia by
NEW MARTINSVILLE SUPPLY CO.
New Martinsville, West Virginia

The Twentieth Anniversary of the Truscon Steel Company has just occurred. As a compliment to business executives Truscon has summarized the experience it has gained during these two decades in the field of standardized and simplified building, and is presenting it to them in convenient form. These four brochures tell Truscon's story completely. Complimentary copies sent on request

Simplified Building Explained

Brochures of Useful Information for the Busy Executive

Interesting building problems such as are constantly arising in the oil industry are solved daily by the expert service of the Truscon nation-wide organization. Answers to many important questions as well as other useful information have been brought together in these four brochures.

These brochures and Truscon Service should be of great value to every business executive who is interested in procuring an attractive, substantial and fire-proof building but dreads the uncertainty as to cost and completion date, and the time, trouble and the arduous details incident to building.

Of interest to the oil industry

Made entirely of steel, including, doors, windows, walls, roof and trusses, Truscon Standard Buildings are particularly adaptable to the use of the oil industry, as there is nothing about them that can burn. Truscon Alloy Steel, an 18-gauge material of proven durability, is used for side walls and roof, insuring permanency. Truscon Steel Windows provide the maximum daylight and ventilation.

Unit panels permit any size or arrangement of building; and if change of location is desired, Truscon Standard Buildings can be easily taken down and re-erected elsewhere. Used for pumping stations, bulk stations, warehouse, engine houses, filling stations, garages, etc., etc. A size and type for practically every requirement.

All of these typical construction difficulties are eliminated through Truscon Standard Buildings. You know to a penny what your building will cost you, and the exact day when it will be ready for occupancy. There is not a single detail which you need worry about. And in addition, Truscon Standard Buildings cost less than other permanent building construction.

Whether or not you need a building at the present time you should have these four brochures in your files for purposes of quick reference. They are indispensable to your business library. Send for them today. Your request involves no obligation whatever.

TRUSCON STEEL COMPANY

Home Offices and Plants at Youngstown, Ohio

TRUSCON STEEL COMPANY, YOUNGSTOWN OHIO U.S.A.

Warehouses and Offices from Pacific to Atlantic. For addresses see 'phone books of principal cities. Canada: Walkerville, Ont. Export Dis: New York.

Send useful building book and suggestions on building to be used for.....

Type..... Length..... Width..... Height.....

Name.....

Address.....

MOTOR FUELS AND ENGINES OF FUTURE

(Continued from Page 36)

ground by 30 per cent! We motorists who use most of the petroleum would be making a deeper cut into every barrel of crude and so we would require fewer barrels. Thus the demand would be diminished as far as the total amount of crude was concerned. It seems quite likely that this is to be our first step in advance because it is a step we have taken before, time and again. The importance of this latest step is that no one among the automobile engineers thought we could take it. They felt that we were using even today a heavier fuel than we should be asked to use. These tests were undertaken to settle the argument they were having with the oil men who said they should use much heavier stuff than they had been willing to accept.

Deeper Into the Crude

There is, however, a limit beyond which the kind of engine we are now using can't go. You cannot dismiss the pending gasoline shortage with the thought that we will cut deeper and deeper into the crude. When that happy thought is under discussion remember that we have never been able to burn kerosene in an automobile with complete satisfaction and that the reason it can be used in some tractors is that they are running most of the time on full load. Remember that below the kerosene comes a still heavier oil, and remember that we are already using a lot of that which was once useless for motor fuel, by cracking it. And remember that below that comes lubricating oil which hasn't yet become so much a drug on the market they are giving it away. In other words we are getting about as deep into the barrel as we are likely to get with the present type of engine.

You can see that it has been thoroughly shown, though not yet practically put into production, that we need have little fear, if any, of the exhaustion of motor fuel. We will gradually, no one knows how fast, exhaust our underground supply of crude and the price of that kind of gasoline will go up. Nor is there a substitute for gasoline available at any price around 30 cents a gallon or less, so we can confidently expect a rise in fuel cost before many more years have passed. What will happen then?

Unquestionably a lot of the cars which are now running would stop because they are run on such a narrow margin of profit. For most of us it would make little difference because the cost of gasoline is a small item in upkeep, but for those who have a shed for a garage and who do their own repairing and who make a car do for a great many years so they may profit from its use as a unit of transportation the story is different. The salesman, the delivery man, the farmer and the bus companies will find with their 1920-3 engines that fuel is costing too much. Will they stop? A thousand times: no!

More Mileage

As the price of fuel rises the engineers are going to step into the field and produce engines so economical that they will keep pace with the rise—engines which will probably be just as much fun to drive up hill as the engine of today is.

Perhaps you prick up your ears at that and retort: well, what are the engineers waiting for? Why don't they turn us out a car now which is so economical that it will run twice as far to the gallon of gasoline as the cars do?

Like the answer to the most difficult conundrum the answer to that question is absurdly simple. As long as gasoline is so cheap people are not interested in cars which are phenomenally economical. They aren't buying cars on the gasoline mileage. They are thinking in terms of power and speed, longevity and looks. If you were an engineer turning out current models do you think you would worry about gas mileage? You wouldn't if you were a good engineer and you won't until public opinion demands that you should.

Yet the far-seeing engineers have already begun to think about economy for the car of the future. They know pretty well the general principles and the major improvements which are to come. Talking to them I have found that they are willing to speak publicly about the car of the future and how it will be able to do 50 or 60 miles on the gallon of fuel. Experimentally they have done nearly that well in practical road tests. They say it is a development of the near future.

HIGH GRADE CRUDES AVERAGE 93 CENTS BBL.

(Continued from Page 34)

fornia crude can be bought and run around through the Panama Canal.

Powell menaces California. If it can keep up its production a little longer it may cause a drop in California prices, and the whole industry well knows that California operators are now being paid so little for their oil that few, if any of them have made any money, notwithstanding the immense production. Another cut in California would be a very severe financial blow to producers on the Coast. At the same time Powell continues a thorn in the side of the more northerly Mid-Continent fields. The Prairie Oil & Gas Co., the heaviest buyer of crude in the more northerly fields cannot, through the pipe lines, deliver crude on the Atlantic Coast for less than $2 per barrel at the present price in the field. The purchasing companies whose pipe lines run to the Gulf Coast may do a little better than this. It is a question. The 25 cent differential between Powell oil and North Texas and Oklahoma oil of the same grade, together with the additional mileage the oil must be run through the lines, would give them little advantage over the Prairie. The East Coast refiner can beat the $2 price by trading in Powell or California crude by perhaps 20 cents per barrel.

Until Powell and California cease to produce enough to fill the demand on the East Coast, northern Mid-Continent producers can hope for little better than they now have in sight, and it would not be wise for them to endanger the present low price structure by a wide open drilling campaign.

VANDERLIP'S OIL VENTURES

Five or six years ago Frank Vanderlip and associates invested $1,500,000 in the purchase of a high hill ranging along the Pacific Coast near Los Angeles, says Barron's. Vanderlip believed it might contain oil, but nothing has ever been done to prove it. The mountain and the investment stand there in lonely grandeur overlooking the booming city of Los Angeles and six new oil fields that are today making the oil history of the world. Vanderlip has flirted with oil for many years. He was president of the National City Bank, largely directed by the Rockefeller family. He was head of the American International Corp. when it got its feet mired in a Texas oil venture, which looked good to the Standard Oil taking oil all around it. Then Los Angeles attracted him, and he might perhaps have done better to have shut his eyes and made his Los Angeles investment almost anywhere else than where he did. Apparently oil does not stick to Vanderlip.

LOS ANGELES PLAN DROPPED

LOS ANGELES, Calif., Nov. 10.—Union Oil Co. has abandoned the plan for loading tankers at sea by laying pipe lines from Huntington Beach, the lines to rest on the bed of the ocean when not in use. Completion of new pipe lines extending from the beach to the harbor terminal, affording additional transportation facilities, will also be given up, though the company had been granted a permit to lay the lines by the War Department.

Casing is Heavy Stuff

and the thing to handle it with is Yellow Strand Rotary Casing Line. There's 240,000 to 260,000 pounds tensile strength per square inch in every steel wire in its make-up. Yellow Strand, famous the world over for its elasticity, is as near shock-proof as wire rope can be made. Amply flexible for sheaves and drum of any rotary rig. Nothing short of downright abuse will crush or mash the strands. Does more—costs less.

Write for Catalog K2, and name of nearest distributor of Yellow Strand and other good B & B Lines.

BRODERICK & BASCOM ROPE CO.
ST. LOUIS, MO.

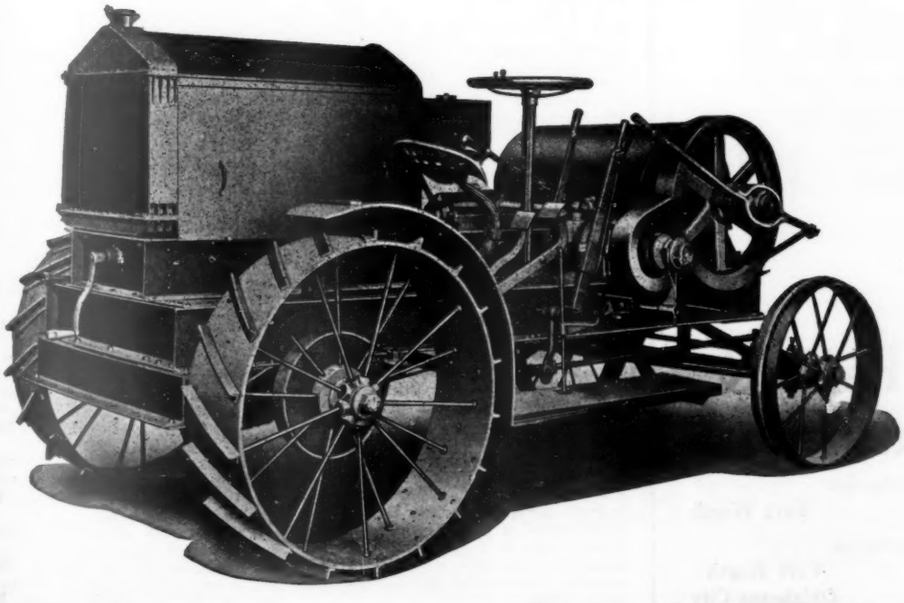
Branches: New York and Seattle *Factories:* St. Louis and Seattle

G267

Yellow Strand Rotary Casing Lines

Tractor Rod and Tube Pulling and Bailing Machine

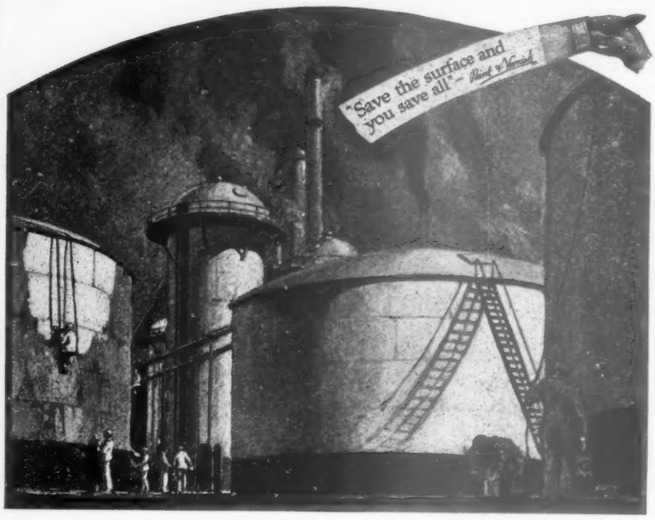
"Built for the Job"



Cuts operating cost. Wide range of speeds. Operating levers centrally located. Three speeds and reverse on spool or road. Special features: Shafts mounted on Ball Bearings, heat treated Nickel Steel Gears, Steel Clutches, Bronze Bushings in all parts running loose on shafts; moving parts are enclosed running in oil, protected from dust and dirt. Power take off pulley for belt work. Drawbar on rear full width of machine.

Patents Applied for and Pending

Myrick Machine Co.
Olean, N. Y.



For a Metal Primer

Use Cook's Rust Inhibitive Brown

It is scientifically made from natural oxides of iron, reinforced with highly basic lead and chrome pigments, ground in the correct proportions of treated oils. It is easily worked and dries under the most adverse conditions. Large corporations who demand a paint suited to modern shop conditions find Rust Inhibitive Brown a practical solution of their problems, as well as an economical and serviceable paint.

Cook Paint & Varnish Co.

Factories:

Kansas City Fort Worth

Branches:

Omaha Fort Worth
Wichita Oklahoma City

CANADIAN FIELDS

(Continued from Page 52)

flowing by heads, is about 50 bbls. a day, perhaps better; but it is generally thought the well will do a lot better when tubed and put on the pump. At present it is flowing from the 6⅝-inch casing and as this has not been carried down, there has been some caving, impeding the flow of oil. A string of pipe and a swab are being secured and when these have been used some definite estimate of the production can be made.

The well is about 15 to 20 miles south and somewhat east of the nearest Trenton production in the Dover Field, Kent County, and is close to Lake Erie, in an area only recently tested by deep drilling. In the last year or so the Eugene Coste Co. has drilled three deep tests some miles west, two in Romney Township and one in Essex County. To the north, the nearest Trenton test was one drilled some years ago north of Fletcher, in the old Tilbury oil field; but this was discontinued at 3,167 feet, after going only 387 feet into the Trenton, and consequently finished more than 400 feet short of the productive horizon in the Glenwood-Shanks.

Another Deep Test Reported

There has been in the past week a considerable influx of oil men to Chatham, which is the operating headquarters for the field, and some leasing is being done. Three miles east of the Glenwood-Shanks, the Union Natural Gas Co.'s No. 248, old Truckenbrod farm, is reported drilling at 2,275 feet, on a Trenton test. Reports are current that the Union Natural Gas Co. has spotted another deep test on the Mancell farm, near the Kerr No. 1, the discovery well of the Tilbury Field. This location would be in a direct line between the Glenwood-Shanks and the Dover deep producers. No official confirmation of this new location can be secured, however, from the Union.

Further west, in Essex County, the Eagle Oil & Gas Co. may resume operations at Arner, in Colchester Township, as a result of the Glenwood strike. Eagle No. 1 at Arner got the Trenton at an unusually high point, 2,200 feet, but immediately afterward ran into difficulties, and had ultimately to abandon the well owing to telescoped casing.

In the Canadian West, Imperial Oil, Ltd.'s Gratton No. 3, Section 14-45-8w4, is drilling around 1,900 feet. British Petroleums, Ltd.'s No. 2, Section 30-46-6w-4, in the Irma-Wainwright area, is drilling. In the Okotoks Field, Royalite Oil Co.'s No. 4, Section 7-20-2w-5, is drilling around 3,000 feet.

At Lethbridge, the Standard Refining Co.'s plant is waiting for the installation of machinery, which has been shipped. It is reported that the Kia-Oro well, on the Montana side of the Sweetgrass Field, recently reported a 15-bbl. pumper, has had a slight caving at the bottom. It will be cleaned out and put on the pump.

Natural Gas Developments

Natural gas from the Viking Field is now being delivered to the city of Edmonton through the Northwestern Utilities, Ltd.'s lines. The town of Viking, Ryley, Tofield and Holden are also being supplied from this field. The delivery of gas was temporarily halted by an injunction secured from Justice Simmons by James A. Collins, one of the shareholders of the old Northern Alberta Natural Gas & Development Co., restraining Northwestern Utilities, Ltd., from further dealing with the assets of the old company. Collins claimed that the arrangement whereby the assets of the original company were taken over by the Northwestern Utilities, Ltd., and its subsidiaries was improvident and not properly carried out and in fraud of the shareholders of the Northern Alberta Natural Gas & Development Co. The injunction was later set aside by the appellate division of the Alberta Supreme Court.

The Natural Gas Board of Reference for Ontario this week held a hearing at Chatham to determine which of two natural gas franchises was effective in the village of Merlin, in Kent County. The township of Raleigh claimed that Merlin is being served under the Rondeau Oil & Gas Co. franchise, while the Union Natural Gas Co. claims it is being served under the James Halliday franchise, which expired a year ago. Decision was laid over pending the submission of written argument by counsel.

Payment of the mineral tax imposed by the Alberta Provincial Government and effective in that Province on September 1 last, has been held up, pending a decision on the appeal of the C. P. R. to the Dominion Government to disallow the tax. Other interests affected have declined to pay the tax until the appeal is decided.

Imperial Oil, Ltd., has declared a dividend of 75 cents a share, payable on December 1, to shareholders of record November 15.

Geologists at Houston Name Committees for National Convention

HOUSTON, Tex., Nov. 12.—The Houston Geological Society has appointed committees and started plans for the annual meeting of the American Association of Petroleum Geologists, which will convene in this city late in March. The exact dates have not been selected.

John R. Suman is president of the local society. Max W. Ball, of Denver, Colo., is president of the American Association and Frank De Wolf, of Dallas, vice president. The American Association has a membership of approximately 800 and the Houston Society expects an attendance of at least 500. Many members are located in Mexico, Central and South America and it is desired that those contemplating a visit to the United States may arrange to come during March and attended the sessions.

It will be the first time the American Association has met south of Dallas and special papers will be read on saline domes that characterize the Gulf Coast territory and arrangements made for their examination by the visitors. It is expected this feature of the program will attract many members of the American Association not familiar with salt domes who will take advantage of the opportunity to study them first hand.

The committees named by the Houston society are as follows:

General chairman: Alexander Duessen.

Program: Wallace E. Pratt, chairman; R. F. Baker, D. C. Barton, G. M. Bevier, E. T. Dumble, Dilworth Hager, H. E. Minor, R. W. Pack, F. B. Plummer.

Arrangements: F. B. Plummer, chairman; G. M. Bevier, E. W. Brucks, Charles Jaqua, Lyman Reed.

Hotels: David Donaghue, chairman; W. D. Blackburn, W. F. Bowman, Edgar Kraud.

Reception: Dilworth Harper, chairman; Mrs. Paul Applin, Paul Applin, O. H. Eickelberger, Miss Alva Ellisor, Miss Hedwig Knicker, Miss Laura Lee Lane, Miss Reba Masterson, Mrs. F. B. Plummer, Fred C. Sealy.

Banquet: D. M. Cashin, chairman; A. S. Henley, Paul Leavenworth, Lloyd North, S. A. Thompson, Miss Grace Newman, Mrs. F. B. Plummer.

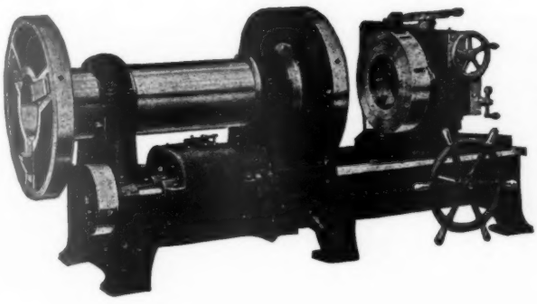
Field trips: R. F. Baker, chairman; D. C. Barton, D. P. Carlton, W. F. Henniger, H. E. Minor, F. B. Plummer, Fred C. Sealy,

Ladies: S. A. Thompson, chairman.

Finance: L. P. Garrett, chairman; F. M. Hutchinson, H. E. Minor, D. M. Cashin.

Publicity: D. C. Barton, chairman; R. L. Dudley, G. M. Bovier.

Entertainment: J. Elmer Thomas, chairman; George Sastello, R. L. Dudley, R. B. Whitehead, Luther White, Ben Stroud, J. Earle Brown.



They Don't Wear Out

Have you ever experienced serious delay, or had your plant tied up entirely because your old pipe machine had something wrong with it? You can't afford to have such a machine around. It would make a good anchor for a battleship.

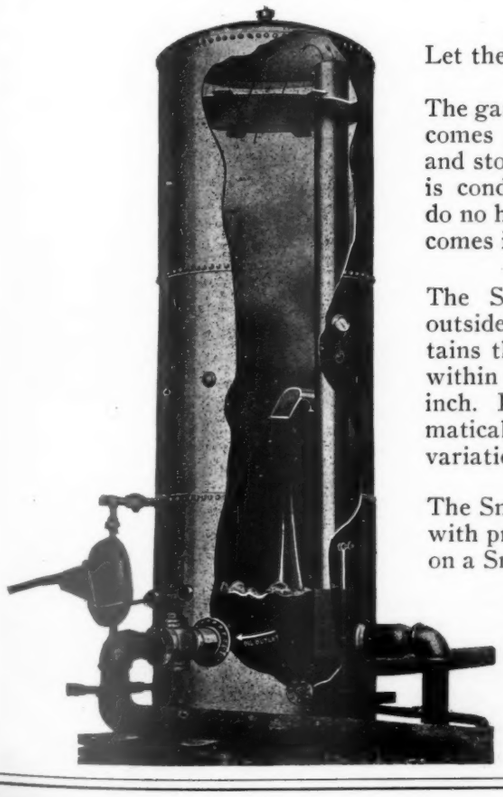
B & K Pipe Machines

stand the racket. That's what counts. A customer just writes: "We use pipe machines of your make, but they don't wear out."

Suppose you arrange to profit by his experience

BIGNALL & KEELER MACHINE WORKS
Edwardsville, Ill.

Have You Trouble With Gas In Your Crude?



Let the Smith Separator solve your problem.

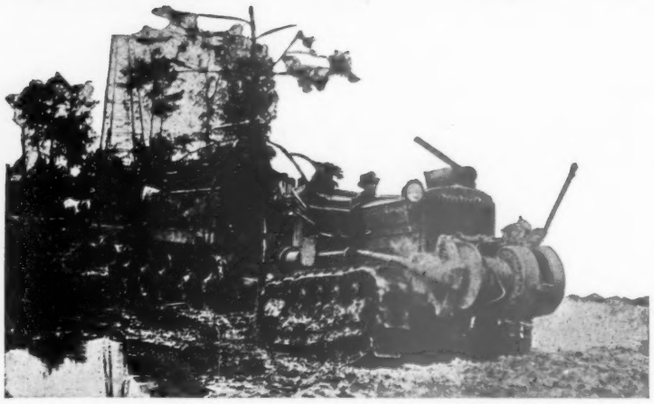
The gas is so thoroughly removed by the Smith Separator that the oil becomes safer to handle and store. The gas as it is conducted away, can do no harm even if it becomes ignited.

SMITH OIL AND GAS SEPARATOR

The Smith method of outside control maintains the level of the oil within a fraction of an inch. It insures an even, smooth flow of oil to the stock tanks. It automatically separates the gas from the oil — automatically adjusts itself to variations in pressure.

The Smith Separator operates efficiently without carrying a pressure or with pressure—as the producer desires. If desired a vacuum can be carried on a Smith Separator.

SMITH SEPARATOR COMPANY
TULSA, OKLA.



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* * *

In tropical wilderness, in mountainous districts, across deserts and through uninhabited country where no other form of transportation is practical or economical, the "Caterpillar"* Tractor forges ahead, a real pioneer, making its own roads and then hauling over them, transporting heavy cargoes of boilers, machinery, drilling outfits, derrick timber, pipe and oilfield supplies.

In the construction of pipe lines and in contract hauling, "Caterpillars" are used by producers and by contractors as the most dependable power because the "Caterpillar" is able to travel, climb, and pull in mud, sand, steep grades, plow through snow, and to operate successfully where no road exists.

Winch and cable attachments provide ready power for loading cargoes, placing machinery, and general construction work. Holt engineers, constantly studying the most extreme demands of cross country transportation, have developed the "Caterpillar" to its present state of perfection. It is backed by Holt's positive guarantee of satisfactory performance, and by a most complete service organization.

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The Holt Manufacturing Co., Inc.
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Export Division: 50 Church St., New York
Cable Address: "Caterpillar," New York

Branches and service stations all over the world

CATERPILLAR

481

NORTH CENTRAL TEXAS

(Continued from Page 40)

Robinson and others' No. 1 Grubbs, underreaming 8¼-inch casing at 2,015 feet; Seaboard Oil & Gas Co.'s No. 4-A Hughes, shut down with a hole full of water at 2,580 feet; Shamrock Oil Co.'s No. 3 Bower, drilling at 655 feet; Smith and others' No. 1 Benson, showing for a 50-bbl. well at 895 feet; Snowden and McSweeney's No. 1 Carter, trying to pull pipe to underream at 1,870 feet; Weekly and others' No. 3 McLaren, drilling at 1,200 feet; Whitehead and others' No. 1 Johnson, shut down for casing at 4,229 feet.

Stephens County

Completions—The Texas Co.'s No. 19 Black Bros., dry at 4,135 feet; Eastland Oil Co.'s No. 4 Shipley, 2,000 bbls. at 3,155 feet.

Drilling—Critten and others' No. 1 Cobb, drilling in shale and lime at 2,910 feet; Mid-Kansas Oil & Gas Co.'s No. 2 Couger, fishing for casing at 3,150 feet; McClain and others' No. 1 Hill, drilling at 3,355 feet; Texas Consolidated Oil Co.'s No. 5 Martin, drilling in hard black lime at 3,855 feet; Dalsa Oil Co.'s No. 1 Beck, cleaning out to test a formation showing some oil at 1,675 feet; Foster and others' No. 2-C Shipley, flowed 160 bbls. in 14 hours and drilling at 3,165 feet; No. 3-B Shipley, cleaning out at 3,080 feet; Humble Oil & Refining Co.'s No. 1 Wild, drilling in shale at 3,100 feet; Magnolia Petroleum Co.'s No. 4 Brown, drilling with hole full of water at 3,265 feet; No. 2 George, topped a gray lime and has 500 feet of oil in the hole at 3,570 feet; No. 12 Rush, drilling in brown shale at 2,100 feet; No. 4 Walker, drilling at 2,135 feet; Mahlstedt-Mook Oil Co.'s No. 1 Boyett, has 1,000,000 feet of gas from a caving hole at 2,415 feet; Scott and others' No. 1 Davis, drilling at 2,665 feet; Royal Palm Oil Co.'s No. 1 Newnam, cleaning out before drilling deeper at 3,265 feet.

Eastland County

Completions — The Pioneer Petroleum Co.'s No. 1 Baird, 15 bbls. at 2,450 feet; Gholson and others' No. 1 Wood, dry at 3,610 feet.

Drilling—Ablon and others' No. 1 Collins, drilling in lime at 3,060 feet; Clayton and others' No. 1 Steele, shut down for a wire line at 2,120 feet; Eby and others' No. 1 Miller, drilling at 1,600 feet; Gholson and others' No. 2 Shugart, drilling in brown shale at 1,905 feet; Humble Oil & Refining Co.'s No. 3 Merrill, drilling at 325 feet; Knox-Lewis and others' No. 1 Edison, has a sand at 2,850 feet that showed 1,000,000 feet of gas and are drilling; Lone Star Gas Co.'s No. 2-A Hogg, set 5⅝-inch casing at 3,085 feet; Magnolia Petroleum Co.'s No. 3-A Rogers, drilling at 1,925 feet; No. 3 Ross, drilling at 2,250 feet; No. 14 Westmoreland, at 1,035 feet; Panhandle Oil & Refining Co.'s No. 2 Hightower, at 1,325 feet; Clayton and others' No. 1 Harwood, underreaming at 1,250 feet; Daugherty and others' No. 1 Johnson, drilling at 600 feet; Nixon Oil Co.'s No. 2 Parrot, ready to drill in and complete at 1,900 feet; Root and others' No. 1 Walker, drilling at 3,350 feet; Rosenfield and others' No. 1 Burnett, fishing for casing at 2,110 feet; Stover and others' No. 1 Burnett, fishing for cashing at 2,110 feet; Stover and others' No. 1 Ray, drilling at 2,000 feet; Texas Development Co.'s No. 1 Lewis, at 910 feet.

Wildcats

Callahan County: Completions—Curtis and others' No. 1 Hayden, dry at 460 feet.

Drilling—Byron Union Oil Co.'s No. 1 Hennesy, drilling at 3,965 feet in lime. Shackelford and others' No. 1 Allen, drilling at 800 feet.

Palo Pinto County: Completions—Upham Gas Co.'s No. 3 Watson, dry at 3,555 feet.

Drilling—Pender Oil Co.'s No. 1 Slemmons, drilling in a broken lime at 3,705 feet; T. & P. Coal and Oil Co.'s No. 1 Robinson, fishing for tools at 3,580 feet; Thomas and others' No. 1 Thomas, waiting for a shot to go off, has showing of oil and gas from a lime formation at 3,590 feet; Costello and others' No. 1 Costello, drilling at 565 feet; Dalton Oil Co.'s No. 5 Dalton, cleaning out after a shot a 4,058 feet; Jones and others' No. 1 Jones, drilling at 330 feet; Simms Oil Co.'s No. 1 Costello, at 1,785 feet; Singleton and others' No. 1 Holt, cleaning out after setting 8-inch casing at 1,665 feet.

Brown County: Completions—Canyon Oil & Gas Co.'s No. 2 Elsberry, dry at 2,950 feet; Haynes and others' No. 1 Smith, 100,000 feet of gas at 1,600 feet.

Scurry County: Drilling—Lou Tex Oil Co.'s No. 1 Moore, fishing for tools at 3,585 feet.

Shackelford County: Drilling—Beggs and others' No. 1 Parrish, drilling at 1,255 feet; Humble Oil & Refining Co.'s No. 1 Elliott, at 525 feet; No. 1-E Poindexter, at 300 feet; Landreth Oil Co.'s No. 2 Lynch, fishing for casing at 3,398 feet; No. 14 Poindexter, drilling at 800 feet; Texhoma Oil & Refining Co.'s No. 2 Black, running 8-inch casing at 2,225 feet.

Baylor County: Drilling—Waggoner and others' No. 1 Portwood, pulling casing to drill deeper at 1,485 feet.

Clay County: Gulf Production Co.'s No. 1-A Boddy, cleaning out to bottom at 2,350 feet; Knox and Finey Development Co.'s No. 1 Scott, swaging out 6⅝-inch casing, sand at 1,150 feet showing oil.

Montague County: Drilling—The Texas Co.'s No. 1-A Gist, drilling in hard sand and lime at 840 feet; Amerada Oil Co.'s No. 1-A Beasley, drilling in shale at 2,625 feet; Gulf Production Co.'s No. 1 Benton, testing a sand at 2,135 feet; Humphreys Oil Co.'s No. 3 Maddox, cemented 8-inch casing and shut down at 1,950 feet.

Gray County: The Texas Co.'s No. 1 Saunders, underreaming for 10-inch casing and cleaning out at 1,570 feet.

Armstrong County: Drilling—Magnolia Petroleum Co.'s No. 1 J. A. ranch, drilling in red beds at 2,350 feet.

Carson County: Drilling—Gulf Production Co.'s No. 3-A Burnett, spraying oil and underreaming 5⅞-inch casing at 3,142 feet; The Texas Co.'s No. 2 Burnett, drilling a 4¾-inch hole at 3,000 test; Humphreys Oil Co.'s No. 1 Sandford, drilling by tools at 2,535 feet.

Hutchinson County: Drilling—Coline Oil Co.'s No. 1 Sandford, cleaning out at 3,185 feet; McGee and others' No. 1 Smith Capers, cleaning out and drilling at 3,180 feet.

Potter County: Drilling—Producers & Refiners Oil Co.'s No. 2 Masterson, drilling in brown rock at 2,600 feet. No. 1-A Bivens, drilling in red beds at 2,050 feet.

PRODUCTION REPORT
Week Ending November 8, 1923

Burkburnett

American Refining Co.	255
Barkley & Meadows	2,085
Humble Oil & Refining Co.	630
Gulf Production Co.	1,735
Magnolia Petroleum Co.	3,700
Middle States Oil Co.	260
McMahon Oil Co.	520
Panhandle Refining Co.	480
Sinclair Oil & Gas Co.	30
The Texas Co.	620
Texhoma Oil & Refining Co.	590
Miscellaneous	11,825
Total	23,735

Electra

Empire Gas & Fuel Co.	1,910
Humble Oil & Refining Co.	130
Griswold Oil Co.	485
Gulf Production Co.	990
Magnolia Petroleum Co.	5,515
Middle States Oil Co.	150
McMahon Oil Co.	225
The Texas Co.	5,275
Texhoma Oil & Refining Co.	2,555
Miscellaneous	5 600
Total	22,635

Iowa Park, Etc.

American Refining Co.	50
Griswold Oil Co.	15
Gulf Production Co.	65
Texhoma Oil & Refining Co.	40
Miscellaneous	2,000
Archer County—	
American Refining Co.	205
Griswold Oil Co.	425
Gulf Production Co.	300
Humble Oil & Refining Co.	160
The Texas Co.	1,180
Texhoma Oil & Refining Co.	1,960
Miscellaneous	13,160
Petrolia—	
Gulf Production Co.	115
Magnolia Petroleum Co.	50
The Texas Co.	80
Miscellaneous	220
Total	20,105

Stephens County

Empire Gas & Fuel Co.	35
Gulf Production Co.	1,735
Humble Oil & Refining Co.	1,340

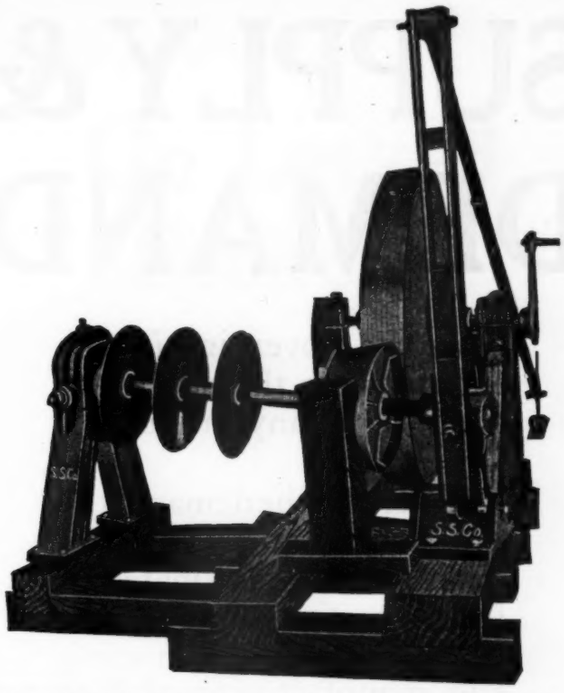
Your Rig is Not Complete

Unless You Are Using the Shaffer "ALMETAL" Sand Reel Support

For any type sand reel without changing standard equipment.

Reduces expense of operating and costs less than any other device. Saves band wheels, sand reels, lines, pipe, money.

Send for Information and Prices



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Flanged and threaded, 125 to 250 lbs. working pressure, for use in refineries and for pipe lines with pressures from five hundred to eight hundred pounds per square inch.

"UNITED"

Products have fully demonstrated their ability to withstand any usage within the pressure limits for which they are designed.

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United Iron Works, Inc.

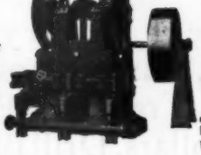
Tulsa Kansas City, Mo. Dallas

"UNITED" IRON WORKS INC. WITH SERVICE

Deming

PUMPS THE WORLD'S BEST

HAND AND POWER PUMPS FOR ALL USES



Deming Single Acting Triplex Pump, Fig. 84. Built for all types of power drives in capacities ranging from 2 to 200 gallons per minute.

Especially designed for high pressure service in handling heavy liquids in oil refineries or pipe lines.

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WHEN confronted by a pumping need turn to Deming with the complete confidence that the pump delivered can be absolutely depended upon for year-in-and-year-out performance. Be assured, too, that the price represents all the economies of large standardized production and the pump-engineering experience of nearly a half century of specialized effort.

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"Hand and Power Pumps for all uses"

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ATLAS SUPPLY CO.

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PUMPS

SUPPLY & DEMAND

—are the governing factors entering into the successful handling of any product.

To create the demand, the product must be honestly made, of the best materials for its particular use; must be backed by engineering and manufacturing skill to see that each piece is properly machined and tested; and the finished product must give real SERVICE. The supply must then meet the demand.

Examine the

DREADNAUGHT

All Steel Rotary, Draw Works, Slush Pumps, Crown Blocks, Traveling Blocks, Drill Collars, Drill Bits, Tool Joints, Elevators, Cast Steel Fittings and general Rotary Drilling equipment and pipe line supplies, and you will see why we have been so busy supplying the demand.

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OR

Frick-Reid Supply Co.
West of the Mississippi

Petroleum Apparatus Co.,
25 Beaver Street,
New York, N. Y.

Or Direct From the Maker

The Beaumont Iron Works Company
Beaumont, Texas, U. S. A.

Magnolia Petroleum Co.	600	
Mid-Kansas Oil & Gas Co.	1,745	
Prairie Oil & Gas Co.	930	
Sinclair Oil Co.	110	
The Sun Co.	1,130	
The Texas Co.	3,125	
T. & P. Coal & Oil Co.	910	
Miscellaneous	8,465	
Total		20,125
Eastland County		
Empire Gas & Fuel Co.	10	
Gulf Production Co.	715	
Humble Oil & Refining Co.	90	
Magnolia Petroleum Co.	555	
Kid-Kansas Oil & Gas Co.	30	
Panhandle Refining Co.	450	
Prairie Oil & Gas Co.	780	
Sinclair Oil Co.	475	
The Sun Co.	15	
The Texas Co.	315	
T. & P. Coal & Oil Co.	1,035	
Miscellaneous	4,390	
Total		8,860
Other Fields		
Strawn—		
T. & P. Coal & Oil Co.	245	
Miscellaneous	435	
Moran—		
Empire Gas & Fuel Co.	160	
Humble Oil & Refining Co.	630	
The Texas Co.	170	
Texhoma Oil & Refining Co.	225	
Miscellaneous	2,950	
Coleman County—		
Miscellaneous	110	
Brown County—		
Miscellaneous	485	
Comanche-Eastland—		
Humble Oil & Refining Co.	350	
Empire Gas & Fuel Co.	15	
Magnolia Petroleum Co.	1,295	
Mid-Kansas Oil Co.	200	
Prairie Oil & Gas Co.	285	
Sinclair Oil & Gas Co.	65	
The Texas Co.	245	
T. & P. Coal & Oil Co.	150	
Miscellaneous	3,720	
Young County—		
Gulf Production Co.	175	
North American Refining Co.	225	
Sinclair Oil & Gas Co.	255	
Oklahoma Petroleum & Gas Co.	110	
Panhandle Refining Co.	430	
The Texas Co.	230	
Miscellanous	3,820	
Mitchell County	745	
Reagan County	150	
Jack County	30	
Total		18,005
Total all fields		112,365
Total last week		112,355
Gain		10

NEW FIELD BELIEVED TO EXIST IN TENNESSEE

(Continued from Page 74)

necessarily occupy a position in the upper Canadian dolomitic limestones, which, like the sediments immediately above and below, are in this part of Tennessee only known by inference from somewhat distant localities of outcrop.

Interests Oil Producers

The drilling in of this large oil well at a depth less than 450 feet at Willow Grove affords peculiar interest to the oil producers and others interested in the shallow fields of Kentucky and Tennessee. Like all of the Trenton oil of southern Kentucky, this crude product is light. A fresh sample collected by the writer gives a gravity of 39.7 degrees Baume. The region in which the Marcom well occurs is similar topographically and stratigraphically to that which has been largely productive at shallow depths just to the north in Monroe and Cumberland Counties, Kentucky. Here in Clay County, as in Kettle Creek and Sulphur Creek, large amounts of salt, sulphur and fresh water may be expected in the Sunnybrook (Trenton) sands. Casing should be set at 160 to 200 feet.

The Willow Grove region lies near the saddle between the Lexington and Nashville (Rutherford) Domes just east of the major axis of the Cincinnati Arch. It has been subjected to compression evidently at various intervals during post-Paleozoic times. The structures are plainly reflected in the Mississippian sediments, though most easily defined on the level between the Chattanooga shale and the underlying Ordovicic limestones. The region as a whole contains a great many small folds, for which the one at Willow Grove may be taken as a type. No particular paralleling of major axes has been noticed. The Kerr anticline on Kettle Creek trends east and west, while the structures at Willow Grove are turned to the southwest. The relatively small size of the structures in this vicinity indicates a succession of small, highly productive shallow pools for this part of Clay County.

Acre-foot production in barrels cannot as yet be figured due to lack of oil runs, but water is at all times to be feared. In case of the large flush producers, salt water encroachment is certain and may not be protracted for many wells. Longer life is anticipated for the smaller producers. Drilling close to the productive sands should be done during daylight only, to avoid fire risks, as many of the wells drill in with a considerable gashead. Flow line to gas-tight tankage, as well as casinghead gate valves, or oil savers, should be used to conserve the flush production.

GULF COAST

(Continued from Page 44)

Weems at 565 feet, located 1,200 feet from The Texas Co.'s No. 10 Robinson. The Texas Co. is rigging No. 11 Robinson, located 800 feet north and east from No. 10. The Texas Co.'s No. 1 Settegast, between Blue Ridge and Pierce Junction, is below 1,550 feet.

At Big Creek, the Gulf Production Co. and Snowden & McSweeney jointly have locations for Nos. 8 and 9 Davis and the Gulf Co. has a location for No. 2 at Boling Dome in Wharton County. It is 970 feet southeast from No. 1.

The Humble Oil & Refining Co.'s No. 5 Singer on the southwest side of the Palangana Dome in Duval County, is sidetracking. R. L. Autry is drilling Nos. 3 and 4 Smith, boths hallow wells.

Cut Milam Crude

The Owens Oil & Refining Co., buyer of the shallow sand product in Milam County, announces a reduction of 15 cents, from $1 per bbl. to 85 cents. Guthrie and others abandoned No. 1 Timmerman in quicksand and have started No. 1-B. The Freddie Parker Oil Co.'s No. 1 Sterlsky is drilling below 856 feet. Jennings and others are rigging No. 1 Branch and M. L. Barrow No. 1 Sterlsky.

South Louisiana

The Texas Co. got salt water in No. 26 Latrielle in the Jennings Pool at 1,825 feet and abandoned the hole. The Coastal Fuel Oil Co.'s No. 86 fee is drilling at 1,780 feet.

In the Vinton Pool, the Sun Oil Co.'s No. 1 Johnson set packer and shut off the water and it is making 250 bbls. at 2,560 feet. No. 3 Vincent is making 150 bbls. of fluid and 90 per cent sediment and water, at 2,150 feet. The Gulf Refining Co. is bailing No. 30 Star at 2,100 feet.

The Texas Co.'s No. 23 Gray is drilling at 980 feet. The Just Oil & Refining Co.'s No. 2 Rogers is at 786 feet. The Gulf Coast Oil Co.'s No. 5 is deepening at 1,500 feet. The Vinton Petroleum Co.'s No. 11 Rescue is drilling at 2,235 feet and No. 23 Gray is sidetracking. The Edgerly Petroleum Co.'s No. 1 Vincent is rigging.

More Wildcats

In Chambers County, the Houston Oil Co.'s No. 1 Mayes has started and Hindman & Keeble's No. 2 Smith is rigging with a heavy outfit. The Unkel Oil Development Co. is starting No. 1 Jamison in Liberty County. The Leaseholders Production & Refining Co. has a location for No. 8 Kirkpatrick in the northeastern part of Webb County.

Dale E. Smith has started No. 2 Dankam in Hidalgo County. In McMullen County, the Balt Petroleum Co.'s No. 1 Stitz is rigging. The Idaho Oil Co.'s No. 1 Kilbourn is starting in Bexar.

In the Seguin section of Gaudalupe County, Coupe and others' No. 1 Scheunman is in rock at 1,900 feet and Tieman and others are setting casing in No. 1 fee. The Plateau Oil Co. is also setting casing in No. 1 Blank, south of Seguin. Berman & Son's No. 1 Imhoff is drilling below 700 feet.

The runs of the Magnolia Petroleum Co. for the month of October total 230,252 bbls. The runs by the same company from the Laredo districts for the same month were 51,128 bbl.

PRODUCTION IN OKLAHOMA DECREASES

Third Quarter's Gross Production Report Shows Decline of 5,020,102 Bbls. in Three Months With Daily Output Drop of 59,980 Bbls. as Compared to Second Quarter. Big Production in Hands of but Comparatively Few Operators

The steady decline in the production of crude petroleum registered in Oklahoma in recent months is reflected in a decrease of 5,020,102 bbls. in the gross production of the State for the third quarter of this year as compared to reports made to the State Auditor for the second quarter. The gross production for the third quarter, as reported to the State, amounted to 40,303,570 bbls. as compared to 45,323,672 bbls. for the second quarter. This was a drop in average daily production of 59,980 bbls., the average for the third quarter being 438,082 bbls. and for the second quarter, 498,062 bbls.

There were 1,314 producers reporting to the State Auditor. Of this number, slightly more than 1 per cent, or 15, produced more than 66 per cent of all the oil, or 26,714,282 bbls. These producers, with the amount of their production, follow: Comar Oil Co., 4,149,797; Gypsy Oil Co., 3,973,893; Phillips Petroleum Co., 3,089,022; Skelly Oil Co., 3,056,069; Carter Oil Co., 2,900,918; Magnolia Petroleum Co. 1,517,945; Prairie Oil & Gas Co., 1,531,839; Roxana Petroleum Corp., 1,358,946; Sinclair Oil & Gas Co., 1,252,105; The Texas Co., 862,479; Twin State Oil Co., 544,565; McCaskey & Wentz, 558,060; Amerada Petroleum Corp., 681,031; the Wolverine Petroleum Corp., 568,630, and T. B. Slick, 668,983.

The list as filed with the State Auditor follows:

Abraham, Joe, Bristow	1,415
Acacia Oil and Gas Co., Pawhuska	1,165
Acta Oil Co., Okmulgee	1,935
Adams, John Q. and A. A. Dennison, Claremore	85
Adams Bros. & Prince, Ardmore	2,464
Adams & McGahey, Ardmore	267
Aetna Pet. Co., Pittsburgh, Pa.	387
Aggas, John, Morris	523
Aladdin Oil Co., Kansas City, Mo.	270
Albion Oil Co., Tulsa	9,249
Alcorn Oil Co., Ponca City	17,480
Aldrew Oil & Gas Co., Tulsa	808
Alexander, J. H., Tulsa	239
Alexander-Shakely Pet. Co., Tulsa	7,136
All-American Oil & Gas Co., Oklahoma City	4,480
Allen Well Co., Allen	555
Almeda Oil Co., Bartlesville	3,700
Amerada Pet. Corp., Tulsa	681 031
American Contracting & Prod. Co., Bartlesville	243
American Eagle Oil Co., Bartlesville	42,330
American Oil & Development Co., Pitsburgh, Pa.	5,223
American Oil & Gas Co., Bartlesville	3,593
American Pipe Line Co., Wichita Falls, Tex.	6,136
American Royalty Pet. Co., Tulsa	1,914
Amster, N. L., Ardmore	26,622
Anderson, C. F., Trustee Dallas, Tex.	4,211
Anderson, S. A., Tulsa	60
Andler, H. F., Tulsa	386
Argue & Compton Co., Tulsa	2,380
Arkansas Natural Gas Co., Pittsburgh, Pa.	2,137
Armstrong Trust Co., Tulsa	1,102
Arthur Oil Co., Sistersville, W. Va.	6,804
Ashland Oil Co., New York, N. Y.	3 404
Ashton Oil & Gas Co., S. Louis, Mo.	166
Associated Oil Prod., Chicago, Ill.	1,347
Atchison Oil & Gas Co., Atchison, Kans.	612
Atkinson, J. H., Omaha, Neb.	21
Atlantic Pet. Co., Tulsa	114,621
Atlantic Pet. Co., Boston, Mass.	1,698
Attleberger & Cochrane, Tulsa	430
Aubyme Oil & Gas Co., Garber	4 476
Ault & Ross, Vinita	3,140
Avery, Cyrus S., Tulsa	409
Avery Oil & Gas Co., Tulsa	1,518
Ayling, A. B., Bartlesville	38
Bashr, Wm. A., Chicago, Ill.	108
Bagley Oil & Gas Co., Auburn, Neb.	2,813
Bailey, F. A., Cushing	24
Baker, Frank A., Tulsa	858
Baker Oil & Gas Co., The, Independence, Kans.	116
Baker & Strawn, Tulsa	48,391
Ball, Cora G., Trustee, Coffeyville, Kans.	1,000
Banford Oil Co., Tulsa	381
Barbara Oil Co., Okmulgee	15,190
Barnsdall Oil Co., Tulsa	247,031
Barrows, Elva C., Tulsa	60
Bartles-Johnston Oil Co., Bartlesville	728
Bartlett, D. A., Estate, Marietta, Ohio	205
Bariett, J. B., Tulsa	262
Bauder & Franklin, Tulsa	79
Baxter, L. W., Tulsa	164
Bay Sate Oil & Gas Co., Kansas City, Mo.	32,243
Bay State Oil & Gas Co., Kansas City, Mo., and Paden Oil Co., Oklahoma City	4,204
B. B. & Waite Drilling Co., Bartlesville	52
Beams, Drew, Okmulgee	3 883
Beasley, S. A., P. H. Stein and M. S. Mussellem, Muskogee	192
Beau-Ard Oil Co., Ardmore	823
Beauchamp, John L., Tulsa	203
Bell Oil & Gas Co., Warren, Pa.	4,941
Ben-Franks Oil Co., Enid	455
Berg, The Chas. E., Inc., Tulsa	2,380
Bergen Oil & Gas Co., Tulsa	3,652
Berlin & Duffield, Tulsa	853
Berry, Geo. D., Coffeyville, Kans.	413
Berry, J. K., Tulsa	28
Berry, R. G., Tulsa	575
Berry, R. H., Tulsa	267
Best, Edw., Nowata	511
Best, F. A. and W. J. Lambert, Tulsa	199
Best, Geo. C., Marietta, Ohio	1,683
Betty G. Pet. Co., Cement	617
Biddle Oil Co., Tulsa	738
Bingman, W. B., Trustee, Okmulgee	1,532
Bingman-Smith Oil Co., Okmulgee	4,119
Bird, Gaffney & Simons, Bradford, Pa.	439
Bisett, Chas. F. and J. J., Tulsa	48
Bisett, Lytle & Gray, Tulsa	6,231
Bishop Oil Co., Tulsa	198
B. Jack Oil Co., Sapulpa	424
Black, J. J., Phoenix, Ariz.	145
Black, L. E., Okmulgee	1,222
Black Panther Oil & Gas Co., Oklahoma City	32,248
Blackstone Oil Co., Tulsa	789
Blakeslee, H. W., Nowata	1,783
Bloch, J. H., Tulsa	419
Bloch Oil Co., Tulsa	1,012
Blue Ridge Oil & Gas Co., Tulsa	204
Board, M., Muskogee	479
Boesche, F. W. C., Coffeyville, Kans.	986
Boeschlin, A. E., Warren Pa.	159
Bokma Oil Co., Chicago, Ill.	842
Bole, Geo. S., Tulsa	122,234
Boles, Neal & Perry, Cleveland	1,001
Bolivar Run Oil Co., Tulsa	861
Borealis Oil Co., Oklahoma City	83
Bovaird, W. M., Sapulpa	2,427
Braden, C. E., Tulsa	261
Braden & Moore, Tulsa	12,543
Braden & Myers, Tulsa	1,732
Braden, Myers & Clinkscale, Tulsa	1,296
Braden, Overton & Braden, Tulsa	5,837
Bradfield, C. H., Tulsa	1,348
Bradford Oil Corp., Robinson, Ill.	478
Bradley, E. A. and Anna, Tulsa	407
Bradley, E. A. and Anna and Arch E., Tulsa	1,494
Bradnorking Oil & Gas Co., Kansas City, Mo.	932
Bradstreet, J. G. & Co., Tulsa	388
Brann, James, Bartlesville	2,080
Branson & Harmon, Nowata	1,314
Branstetter, Ray, Skiatook	1,163
Brazell, James, Oklahoma City	2,619
Breene, Frank M., Tulsa	1,489
Breene, Frank M. et al, Tulsa	11,364
Breene, Mabel V., Tulsa	94
Breene & McKinney, Tulsa	677
Britton-Johnson Oil Co., Tulsa	11,189
Brothers Oil Co., Inc., Tulsa	42
Brown, Chas. H., Oklahoma City	90
Brown, Dr. Geo. W., Los Angeles, Calif.	412
Brown, Guy Oil Co., Wichita Falls, Tex.	6,724
Brown, Robert D., Trustee, Kansas City, Mo.	5,859
Brownlee, Mitchell & Kellough, Tulsa	396
Bruen, Rigdon & Bruen, Kansas City, Mo.	153
Brundred Oil Corp., Oil City, Pa.	2,069
Bruner, A., Tulsa	339
Bruner Oil Co., Independence, Kans.	424
Bryan, J. S., Oklahoma City	10,835
Bucher P. O., Bartlesville	632
Buchner, Guy M., Holdenville	2,319
Buell, J. Garfield, Bristow	1,388
Buell, Mrs. J. Garfield, Bristow	44
Buell, J. Garfield and Seth W. Herndon, Bristow	359
Bull Head Oil Co., Ardmore	10,171
Bumbaugh, Geo. I., Los Angeles, Calif.	232
Burke & Greis, Tulsa	1,852
Burke-Hoffeld Oil Co., Tulsa	21,330
Burns C. D., Preston	576
Burton-Springfield Oil Corp., Tulsa	13,219
Buttram Pet. Corp., Oklahoma City	81
Bu-Vi-Bar Pet. Corp., Bristow	1,083
Cala Belle Oil Co., Cement	1,400
Callahan Oil Co., Omaha, Neb.	505
Callhan, W. F., by J. H. Wright, Atty.-in-fact, Sapulpa	84
Cameron, Mrs. Lillian S., Tulsa	35
Cameron Refining Co., Ardmore	36,405
Campbell, H. C., Nowata	2 357
Campbell & Byers, Cherryvale, Kan.	965
Canadian Prod. Corp., Inc., Tulsa	12,092
Canary, S. C., Tulsa	7,191
Canterbury, S. L., Bristow	2,483
Carey Oil & Gas Co., Wellsville, N. Y.	387
Carlock & Dexter, Ardmore	1 344
Carnahan, J. E., Canton, Ohio	854
Carner, Akin & Argue, Bartlesville	710
Carr, J. M., Okmulgee	1,530
Carr, M. L., Okmulgee	11,372
Carter Bros., Tulsa	4,630
Carter Oil Co., The, Tulsa	2,900,918
Cassidy, Alice M., Admrx., Guthrie	7,302
Castle, Tighe & Kroh, Arkansas City, Kans.	30
Catlett-Davis Oil Corp., Tulsa	129
Central National Oil Co., Okmulgee	4,371
Central Union Oil Co., Tulsa	934
Chalfant, C. C., Pittsburgh, Pa.	424
Chamberlain, H. G., Marieta, Ohio	287
Champlin Refining Co., Enid	26,430
Chestnut & Smith Corp., Tulsa	12,356

On Locked Fenders!

WE'VE READ odes and essays and editorials on everything, from onions to Oneidas and from sunsets to somersaults, but we don't remember having seen anything on Locked Fenders. Something certainly ought to be done about it, and so we're going to take the bull by the horns or the Ford by the crank, so to speak, and start something.

Just the other day we saw a man endeavor to park too abruptly at a crowded curb. He hooked his right rear fender securely around the left front fender of a car already there. He leaned far out of the seat and inspected the situation. It was evident that he could go neither forward nor backward without damage to his own car or the one engaged.

At that moment the owner of the parked car emerged from a nearby shop and joined the little throng already congregated about the two vehicles. Without a word he climbed into his car, threw it into reverse gear and stepped on the starter. It rolled backward a foot or so, disengaging the fenders, and the puzzle was solved. Just as easy as that!

We watched the crowd dissolve while we drew analogies. There are so many locked fenders in the world, you know, that might be released by a little cooperation and no damage done.

Now and then in years gone by we've had the privilege of climbing into the driver's seat and backing up or going forward just a little to release some good Oil Man from an awkward situation before curiosity drew a throng.

We've pioneered with service and equipment. We've worked week days and, when need be, holidays and nights to see the wheels go 'round for friends and customers. We've built factories, we've contracted with manufacturers, we've searched the markets of the world. There isn't any honest thing we haven't done or wouldn't do for Oil Men.

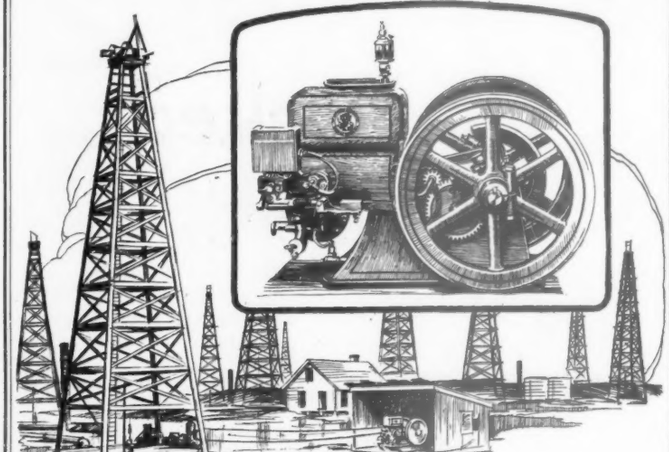
If you value cooperation, if you hanker for business relations with an organization big enough and at the same time HUMAN enough to pull up or back off a little as the need arises, you ought to buy your stuff from Frick-Reid, even without regard for the fact that no company in the world makes or handles better oil country merchandise.

In Oil Field Equipment—the most HUMAN Organization in America

Frick-Reid Supply Co.

Tulsa, Okla. Pittsburgh, Pa.

West of the Mississippi—Stores Everywhere



"Hercules Equipped" is guaranteed pumping service

The well that is equipped with a Hercules direct pumping outfit has guaranteed power. Behind every one of the 350,000 Hercules Engines that are in use is the five-year guarantee of the Hercules Corporation. Every one of them is the same in sturdy construction, in careful workmanship.

The Hercules direct pumping outfits are slow pumping, either gasoline, kerosene, crude oil or natural gas burning models in 3, 5 or 7 H.P. They have hand-lever clutches, the latest type of all-weather magneto, are easy starting and simple of construction.

Even the shallow well with small production, that is at some distance from the main pumping plant, can be made profitable with a Hercules outfit.

Whatever power-driven equipment you need—pumping power, water pumps, air-compressor, hoist—see to it that it has dependable Hercules Power. Hercules Engines range in size from 1½ to 12 H.P.

Hercules Sales Agencies and warehouses are located in Oklahoma City, Dallas and other large cities. Service stations everywhere.

THE HERCULES CORPORATION
Engine Division Dept. E. Evansville, Ind.

HERCULES ENGINES

Chief Bigheart Oil & Gas Co., Wichita, Kans.	927
Chief Drilling Co., Okmulgee	2,406
Choctaw Oil Prod. Co., Tulsa	2,545
Clarion Oil Co., Houston, Texas	3,204
Clark, L. P., Independence, Kans.	188
Clark, M. G., Tulsa	501
Claymo Oil & Gas Co., Clayton, Mo.	530
Cleon Oil Co., Cleveland	5,412
Clifton & Wise, Sapulpa	60
Cline, The A. W. Co., Okmulgee	272
Cline Oil Co., Wichita Falls, Tex.	249
Clover, Marvin K., Tulsa	542
Cobleigh & Shipman, Bartlesville	369
Coe, R. W., Ardmore	1,822
Coe, R. W., Trustee, Ardmore	23,031
Cohen, Aaron, Baltimore, Md.	4,323
Colcord, C. F., Oklahoma City	20,105
Coline Oil Co., The, Oklahoma City	177,129
Collins Mortgage Co., Kingfisher	137
Collis Oil Co., Vinita	3,509
Comar Oil Co, St. Louis, Mo.	4,149,797
Commendable Oil Co., Oklahoma City	178
Commercial Drilling Co., Tulsa	1,204
Commerce Pet. Co., Tulsa	148
Commonwealth Oil Co., Warren, Pa.	1,025
Compton, W. W., and others, Independence, Kans.	299
Congress Oil Co., Kansas City, Mo.	132
Connelly, E. L., Tulsa	222
Connelly, E. L., and others, Tulsa	3,641
Connelly, G. W., Caney, Kans.	2,900
Conner, B. C., Tulsa	204
Constantine, C., Pawhuska	1,167
Continental Oil Co., Bristow	553
Continental Oil & Refining Co., Independence, Kans.	6,378
Constantin Oil & Gas Co., Pat Malloy and W. O. Dickerson, Receivers, Tulsa	69
Cook, G. W., Lawton	1,781
Cora Exploitation Co., St. Louis, Mo.	534
Coronado Oil & Gas Co., Cleveland	2,332
Cory, L. L., Fresno, Calif.	55
Cosden Oil & Gas Co., Tulsa	409,026
Cowham, H. I., Independence, Kans.	197
Cowles, La Mone, Burlington, Iowa	317
Crawford, J. W., Jr., Tulsa	7,460
Creekmore, Morrison, and others	251
Creo Oil Co., Tulsa	15,017
Crescent Oil Co., Bartlesville	277
Crews Estate, Oil & Gas Prod., Covington	27,627
Critchlow, W. S., Ardmore	641
Crosbie, Davis, Sloan & Sturm, Tulsa	2,440
Crosbie & Gillespie Gasoline Plant, Tulsa	2,595
Crosbie, Sturm & Davis, Tulsa	2,979
Cruce & Potter, Ardmore	1,308
Cruce, Smith & Cruce, Ardmore	4,415
Crump & Beard, Duncan	6,729
Cumberland Oil Co., Muskogee	295
Cumberland Pet. Co., Cleveland	3,257
Curtis, W. L. Co., Elmira, N. Y.	204
Curtis, W. L. Co. & F. M. Aiken, Elmira, N. Y.	1,296
Cushing Gasoline Co., Tulsa	19,049
Czarina Oil Co., Ardmore	648
Daisy Belle Pet. Co., Ardmore	16,066
Dallas Co., Tulsa	4,333
Damar Producing Co., Bristow	4,030
Damon Oil Co., Tulsa	1 969
Danciger Oil & Ref. Co., Kansas City, Mo.	400
Davis, C. P., Bristow	2,880
Davis, Jos. D., Tulsa	520
Davis, L. R., Tulsa	1,568
Davis, R. D., Cleveland	286
Davis & Younger Oil Co., Oklahoma City	1.250
D. C. F. S. & Co., Ardmore	1,037
Deaner, C. H., Okmulgee 6".6".°	67
Deems, H. C., Tulsa	364
Deep Fork Oil Co., Marietta, Ohio	1,412
Deep Rock Oil & Ref. Co., Chicago, Ill.	45,560
Dehner, A. L., Tulsa	60
Dekoma Development Co., Tulsa	389
Delmar Oil Co., Bartlesville	128,758
Delokee Gas & Oil Co., Bartlesville	1 770
Demack Oil Co., Tulsa	155
Dennis, Hyer E., Boynton	27
DeSoto Gasoline Co., Beaumont, Tex.	1,076
De Vinna, M. A., Tulsa	354
Diamond, Harry H., Oil Co., Holdenville	1,810
Dick, John, Buffalo, N. Y.	162
Dickerson, O. W., Oil Co., Oklahoma City	1,239
Dixie Oil Co., Cement	9,020
Dock Oil & Gas Co., Bartlesville	506
Dolman, L. S., Walter H. Gant & S. W. Tyer, Ardmore	14,573
Dominion Oil Co., Muskogee	387
Donohue, K. D., Bartlesville	240
Doris Oil & Gas Co., Tulsa	702
Douglass, Harvey, Attorney, Chelsea	297
Dover Oil Co., Bartlesville	667
Dresser, S. Richard, Tulsa	106
Dresser Oil Co., Tulsa	2,003
Drew, Byron, Ardmore	799
D. & S. Oil & Gas Co., Tulsa	1,267
Duffey, H. M. & J. B. & Bessie A. Dye, Tulsa	1,030
Dunn, J. J., Okmulgee	1,294
Dunn Mineral Trust, Ardmore	4,097
Dunnington, A. S., Tulsa	122
Eagle-Picher Lead Co., Henryetta	17,673
Eason, T. T., Enid	4,783
Eastern Oil Co., Buffalo, N. Y.	73,872
Ebling, L. R. & Co., Bartlesville	1,833
Echo Oil Co., Tulsa	27,254
Eliza-Tim Oil Co., Sapulpa	199
Elliott, W. C., Tulsa	226
Elliott & Smith, Tulsa	9,854
Elliott & Vensel, Tulsa	7,594
Elm Oil Co., Tulsa	1,414
Elmer Oil Co., Elmira, N. Y.	2,546
Empire Gas & Fuel Co., Del. Okla. Division, Bartlesville	313,777
Enfisco Oil Corp., Tulsa	9,442
Engish Drilling Co., Cement	19,913
Enid 80 Oil & Gas Co., Enid	395
Enterprise Transit Co., Titusville, Pa.	4,085
Essano Oil Co., Tulsa	908
Ethelyn Oil & Gas Co., Omaha, Neb.	2,273
Evidence Oil Co., Caney, Kans.	876
Exchange Oil & Gas Co., Tulsa	1,215
Farmer, A. L., & A. E. Duran, Tulsa	4,746
Farren, C. F., Tulsa	1,475
Federal Oil Co., Cleveland, Ohio	463
Fee Oil Co., Muskogee	147
Fensland Oil Co. of Texas, Chicago Ill.	7,014
Fidelity Oil Corp., Louisville, Ky.	476
Fifty Nine Osage Oil Co., Bartlesville	40,534
Finance Oil Co., Pawhuska	56,080
Finance Oil Co. & Livingston Oil Corp., Pawhuska	851
Fisher Oil Co., The, Pittsburgh, Pa.	3,536
Fitzgerald, D. C., Trustee, Ardmore	11,669
Fitzgerald, H. L., Tulsa	251
Fitzgerald, John W., Bartlesville	273
Fitzgerald & Withington, Tulsa	796
Flat Rock Oil Co., Tulsa	1,322
Flesher Pet. Co., Tulsa	45,668
Flora Okla Oil Co., Cement	22,599
Force Oil Co., Tulsa	274
Forster, S. F., Dallas, Tex.	850
Forster, Laney & Swain, Bartlesville	154
Fort Ring Oil & Gas Co., Fort Worth, Tex.	6,373
Fortuna Oil Co., Dallas, Tex.	116,128
45 Oil Co., The, & C. S. Bell, Chicago, Ill.	4,919
Foster & Davis, Inc., Bartlesville	10,992
Fox Pet. Co., Ardmore	3,284
Franchot, D. W. & Co., Tulsa	49,330
Francis, W. C., Skiatook	80
Franklin, Wirt, Ardmore	8,886
Franklin, Wirt & The Carter Oil Co., Ardmore	31,357
Franklin Oil & Dev. Co., The, Nowata	1,184
French, M. C., Okmulgee	531
Friedman, Loues, Tulsa	271
Friedman, Loues Oil Co., Tulsa	1,176
Frost, D. E., Stevens Point, Wis.	560
Gaffney, H. E. & H. B., Bradford, Pa.	3,261
Gaffney, H. E. & Olive, Bradford, Pa.	2,076
Galbraith, H. H., and others, Independence, Kans.	2,569
Gamo Oil Co., Claremore	350
Ganas, John, Pawhuska	397
Gant, Walter H., Ardmore	2,751
Gardner, J. K., Okmulgee	261
Gardner & Avery, Tulsa	271
Gardner Oil Co., Tulsa	50
Gardner Pet. Co., Tulsa	92,931
Garnett, M. R., Nowata	139
Gartner, J. L., Tulsa	931
Gates Oil Co., Ardmore	8,721
Gates Oil & Gas Co., Denver, Colo.	264
Gates-Cooke Drilling Co., Okmulgee	672
Georgia Oklahoma Oil Syndicate, Tulsa	80
Georgia Oil & Gas Co., Copan	4,069
Georgia Pet. Co., Okmulgee	842
Getty, Geo. F., Tulsa	95,352
Getty, Geo. F., and others, Tulsa	862
Getzendaner, R. W., Waxahachie, Tex.	415
Ghormley Oil & Gas Co., Coffeyville, Kans.	55
Gilbert, D. Lawrence, Cleveland	403
Gilchrist, H. W., Bartlesville	1,009
Gillespie, Joe, Coffeyville, Kans.	71
Gillette, J. N., Tulsa	653
Gilliland Oil Co., Tulsa	61,572
Gilmer Oil Co., The, Ardmore	36,930
Gilmer Oil Co., Lamine, Mo.	79
Gladstone Oil & Ref. Co., Shreveport, La.	4,891
Glasco Oil Co., Sapulpa	6,538
Glasco Oil Co. & Ross Inv. Co., Sapulpa	36,703
Glass, J. Wood, Nowata	262
Glass & Wettack, Nowata	56
Glass, Reed & McSpadden, Nowata	538
Glass & Weaver, Nowata	49
Gled Oil Co., Tulsa	69
Glidden, H. P., Tulsa	1,124
Godfrey, F. L., Enid	1,132
Goforth, W. A., Receiver Meridian Pet. Corp., Tulsa	34,193
Goldie Oil & Gas Co., Kansas City, Mo.	562
Gorman, M., Trustee for Stahl & Horrigan, Ardmore	2,429
Graham, J. H., Bartlesville	6,111
Graham Mineral Trust, Ardmore	6,689
Grand Duke Prod. Co., Muskogee	1,415
Gray, Wm. D., Tulsa	931
Greenfield Trust, Rock Island, Ill.	801
Greenwalt, H. L., Okmulgee	260
Gregg, C. O., Ardmore	1,669
Greis, H. N., Tulsa	144
Grieves, John B., Tulsa	2,524
Griffin Prod. Co., Tulsa	2,783
Grimes, W. Baker, Tulsa	206
Grimes & Elliott, Tulsa	179
Grimes, Elliott & Blair, Tulsa	68
Grimes, Parent, Gillespie & Dickson, Tulsa	475
Gypsy Oil Co., Tulsa	3,973,893
Halco Oil Co., Tulsa	593
Hales, W. T., Oklahoma City	63,547
Haley, E. J., Okmulgee	83
Halfmoon Oil Co., Dewey	379
Hall & Lucas, Duncan	2,001
Hamburger Bros., New York N. Y.	51
Hamilton, W. R., Dewey	1,103
Hammat, D. W., & Co., Tulsa	1,216
Hammat, A. A., Tulsa	216
Hamon, Jake L. Estate, Ardmore	22,285
Hancock, W. E., Tulsa	2,092
Hancock Oil Co., Tulsa	744
Hane, C. E., Agent, Tulsa	26,536
Haver, J. L., Muskogee	261
Haner Oil & Ref. Co., Muskogee	418
Hannis Oil Co. (John H. Striker, Trustee,) Tulsa	140
Harberson, C. C., Kansas City, Mo.	2,782
Harland Oil Co., Pittsburgh, Pa.	21,065
Harmon, C. C., Nowata	1,155
Harmon, W. J., Okmulgee	175
Harrington, Lillian F., No. 5, Tulsa	241
Harrington, William, Marietta, Ohio	173
Harrington, W. J., Coffeyville, Kans.	1,619
Harris, J. A., Jr., Trustee, Philadelphia, Pa.	272
Harris, J. A., & Fred Cox, Earlville, Ill.	9
Harris, Mrs. L. C., Rising Sun, Ind.	97
Harris, T. D., Okmulgee	276
Harris, T. D., Trustee, Okmulgee	210
Harris, Haun & O'Shaughnessy, Blackwell	1,190
Hartman & Mann, Pittsburgh, Pa.	169
Harvey, Phil P., & H. C. Ewers & Sons, Coffeyville, Kans.	227
Haskell, F. K., Bartlesville	174
Haskell, F. K., Agent, Bartlesville	1,703
Hastings, W. T., Marietta, Ohio	207

Hatch, G. W., Nowata	138
Hayden & Uhl, Tulsa	362
Hays Oil Corp., Oil City, Pa.	358
Hazen, S. P., Tulsa	109
Hazlett, A. G., Morris	1,229
H. C. W. Oil Co., Chelsea	475
Healdton Field Oil Co., El Reno	1,904
Hector Oil Co., Bartlesville	16
Heenan, J. A., Ardmore	1,822
Heffner Co., The, Ardmore	1,822
Heggem & Davis, Tulsa	1,645
Helena Oil & Gas Co., Tulsa	901
Hennessey, J. E., Okmulgee	989
Henry Oil Co., The, Tulsa	13,740
Henry & Avers, Tulsa	1,320
Henton, E. L., and others, Tulsa	1,723
Henton & Weible, Chelsea	361
Herbert Oil Co., Fort Worth, Tex.	2,772
Herman Oil Co., Tulsa	966
Hertzel, F. G., Warren, Pa.	1,091
Hewitt Mineral Trust, Ardmore	2,208
Heyner Pet. Co., Tulsa	1,614
Hibbard, S. B., S. S. Glasscock & John H. Hammond, Trustees, Kansas City, Mo.	4,195
Hickernell, G. W., Trustee, Warren, Pa.	290
Hill Oil & Gas Co., Tulsa	79,403
Hillside Oil Co., Parkersburg, W. Va.	1,546
Hilltop Oil Trust, Ardmore	3,353
Hinerman & Marshall, Tulsa	2,869
Hinkle, F. V., Okmulgee	765
Hippodrome Oil Co., Tulsa	1,355
Hiram Oil & Gas Co., Kellyville	244
Hiteshew, W. B., Trustee, Robinson, Ill.	633
Hivick, J. P. & L. C., Ardmore	990
H. & M. Petroleum Co., Tulsa	1,023
Hoefer, C. C., Kansas City, Mo.	53
Hoge, J. B., Nowata	268
Hojoco Oil Co., Tulsa	409
Hollingsworth, George C., Receiver, Ardmore	985
Hollingsworth, H. L., Broken Arrow	76
Holm, Martin H., Chicago, Ill.	277
Holm, Coombs & Chapman, Bartlesville	692
Holmes, Walter E., Tulsa	5,422
Homaokla Oil Co., Oklahoma City	33,758
Home Gas Co. of Cushing, Cushing	18,060
Hornecker, Henry, Tulsa	737
Hornecker, Frederick & Hagler, Tulsa	103
Hornecker & Graham, Tulsa	268
Hornecker & Hagler, Tulsa	1,918
Hornecker, Miller & Dunnigan, Tulsa	187
Horrigan, D. E., Ardmore	156
Houser, M. A., Tulsa	306
Howard, Paxton H., Tulsa	124
Howard, Duffield & Berlin, Tulsa	6,565
Huckleberry, J. H., No. 5, Kansas City, Mo.	145
Hudson, Frank, Admr. Estate C. E. Vandervoort, Sr., Pawnee	430
Hudson Oil Co., Wellsville, N. Y.	99
Hughes, Roland A., Cygnet, Ohio	337
Hughes, R. A., Orra Brecht & Getta Solether, Cygnet, Ohio	257
Hughes & Schwyn, Cygnet, Ohio	589
Hughes, Weatherford Oil Syndicate, Dallas, Tex.	1,144
Hulen, H. E., Bartlesville	1,451
Hulings, F. W., Okmulgee	3,924
Hulings, F. W., Trustee, Okmulgee	254
Hulings, M. C., Tulsa	123
Hulings & Smith, Okmulgee	347
Hull, J. A., Tulsa	153
Hull, J. A. Co., Tulsa	12,035
Hull, J. D., Tulsa	65
Humble Oil & Ref. Co., Houston, Tex.	293,453
Hummel, Charles, Chelsea	783
Humphreys Pet. Co., Tulsa	8,494
Hunt & Grastorf, Colorado Springs, Colo.	758
Huntley Oil Corp., Pittsburgh, Pa.	17,251
Hurdle, H. J., Mounds	122
Hutt, Annie M., Fort Worth, Tex.	170
Hutt, E. F., Kansas City, Mo.	170
Hutt, J. E., Kansas City, Mo.	170
Hyden, Arch H., Tulsa	189
Hyer, Fred, Fort Worth, Tex.	1,166
Ideal Oil & Gas Co., Ardmore	2,759
Ideal Royalty Co., Tulsa	1,533
Iliata Oil Co., Vinita	116
Illinois Oil Co., Chicago, Ill.	89
Illinois-Kansas Oil & Gas Co., Tulsa	1,730
Imo Oil & Gas Co., Covington	10,777
Independence Oil Co., The, Independence, Kans.	2,087
Independent Oil & Gas Co., Okmulgee	152,459
Indian Territory Illuminating Oil Co., Bartlesville	43,993
Indiana Oil & Gas Co., Tulsa	37,319
Interstate Oil & Gas Co., Bartlesville	5,033
Invader Oil Corp., Muskogee	3,046
Iowa Oil & Ref. Co., Healdton	2,720
Iron Mountain Oil Co., The, Tulsa	42,178
Irvine, James, Sapulpa	381
Jackson, L. B., Sapulpa	752
Jackson, Wise & Bovaird, Sapulpa	875
Jackson, Wise & Farr, Sapulpa	180
Jackson, Wise & Markham, Sapulpa	8,855
Jankowsky, Mose, Tulsa	2,668
Jeff Oil Co., Chelsea	797
Jeffrey, E. B., Oklahoma City	2,574
Jellnek, John, Nowata	50
Jennie Oil Co., Tulsa	243
Jennings, E. H. Bros. Co., Pittsburgh, Pa.	1,982
Jennings, R. G., & Snowden & McSweeney Co., New York, N. Y.	4,560
Jenson, H. A., West Tulsa	632
Jenson, P. W., Chelsea	428
Jewel Oil & Gas Co., Lawton	984
Jim-Glenn Oil Co., Tulsa	4,593
Jitney Oil Co., Tulsa	144
Johnson, Mrs. C. L., Kansas City, Mo.	94
Johnson, T. E., Memphis, Tenn.	44
Jomac Oil Co., Bristow	66,573
Jones, C. S., Tulsa	931
Jones, R. C., Cushing	2,623
Jordan, E. W., Oil City, Pa.	107
Jordon, F. G., Okmulgee	499
Josey Oil Co., Tulsa	22,261
Kanoa Oil & Ref. Co., Tulsa	6,931
Karnes, H. E., Independence, Kans.	65
Kathryne Oil Co., The, Tulsa, Okla.	405
Kay County Gas Co., Ponca City	68,862
Kay & Kiowa Oil Co., Tulsa	3,689
Keech Oil & Gas Co., Oklahoma City	943
Keenan, J. R., Tulsa	181
Keener Oil & Gas Co., The, Tulsa	30,011
Keith, J. H., Coffeyville, Kans.	184
Kemp, E. R., Estate, Tulsa	1,334
Kennedy, H. W., Tulsa	1,058
Keno Oil Co., The, Tulsa	2,642
Kerull Oil Co., Tulsa	3,934
Kewanee Oil & Gas Co., The, Titusville, Pa.	85,785
Keys Oil Co., Independence, Kans.	225
Keystone Oil & Gas Co., Independence, Kans.	130
King, C. A., Nowata	67
King, C. A., Trustee, Nowata	625
King, C. A., & Fred Bunn, Nowata	257
King, Frank, Okmulgee	786
King Brothers, Okmulgee	5,440
King & Harrington, Tulsa	237
King Philip Oil Co., Bedford, Mass.	508
Kingsley, W. L., Kansas City, Mo.	358
Kingsmith Ref. Co., Tulsa	765
Kingwood Oil Co., Okmulgee	42,660
Kinney, George, C. W. Kingsbury & C. B. Stuart, Sand Springs	163
Kinney, Wood & McIntyre, Tulsa	260
Kinney, George, & C. W. Kingsbury, Sand Springs	140
Kinney, George, C. W. Kingsbury & C. F. Tingley & C. B. Stuart, Sand Springs	350
Kinney, George, C. W. Kingsbury, C. F. Tingley & E. M. Monsell, Sand Springs	2,809
Kirk Oil Co., Ardmore	48,353
Kirkwood, C. W., Trustee, Tulsa	3,445
Kirkwood & Kennedy, Tulsa	289
Kline & Brann, Inc., Tulsa	7,519
Knappenberger, D. L., Sapulpa	88
Knappenberger, W. E., Tulsa	84
Knickerbocker Oil Co., Tulsa	3,638
Knupp Oil Corp., (Warren, Pa.) & Phillips Pet. Co., Bartlesville	949
Knupp Oil Corp., J. J. Lubell & Kansoma Oil & Gas Co., Warren, Pa.	1,642
Kohlenberg, W. C., Sapulpa	37
Kramer, F. W. C., Jr., Trustee, Leesburg, Fla.	833
Lackawanna Prod. & Ref. Co., The, Scranton, Pa.	489
Lahman, C. E., Tulsa	135
Lahman Bell Oil Co., Dewey	807
Lambert, E. J., Tulsa	343
Lambert Oil & Gas Co., Tulsa	9,664
Lamberton, W. J., Estate, Tulsa	46
Lamberton & Wilcox, Tulsa	63
Landon, A. M., Independence, Kans.	5,332
Lane, E., Nowata	1,956
Large Oil Co., Bartlesville	2,785
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Larkin & Reynolds, Bartlesville	2,800
Larkin Oil Co., Tulsa	65
Lasoya Oil Co., Altoona, Pa.	1,928
Latona Oil Co., Tulsa	535
Laurel Oil & Gas Co., Tulsa	99,119
Lawrence Pet. Co., Tulsa	290
Lawson, E. B., Nowata	19,200
Lawson & Cowles, Nowata	895
Lawson & Mancill, Nowata	130
Lawson & Reed, Nowata	308
Lawson & Whitehill, Nowata	1,630
Lawton Corp., Oklahoma City	1,245
Layton Oil Co., Tulsa	836
Lea Drilling Co., Tulsa	772
Lebow, M., Tulsa	349
Lee, Ed C., and others, Springfield, Mo.	621
LeFever, M. M., Marietta, Ohio	383
Lennox Oil & Gas Co., Lenox, S. D.	307
Leonard, J. M., Joplin, Mo.	794
Leopold & Brett, Muskogee	506
Lesh Bros. Oil Co., Arthur	4,413
Levant Oil Co., Ardmore	73,064
Levy, I. B., Trustee, Oklahoma City	2,492
Liberty Oil Co., Inc., George R. Bassett, Trustee in Bankruptcy, Wichita, Kans.	1,338
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Lincoln Oil & Gas Co., Tulsa	2,070
Link Oil Co., The, Tulsa	5,390
Little Fay Oil Co., Tulsa	10,532
Livingston Oil Corp., Tulsa	2,685
Loar, W. N., & Co., Okmulgee	1,434
Lomore Oil Co., Ardmore	3,996
Lone Star Gas Co., Dallas, Tex.	53,360
Love, L. H., Ardmore	2,337
Lovell, J. A., Marietta, Ohio	413
Lovell, Dot L., Guardian Paul Lovell, Marietta, Ohio	969
Lovett, Oil Co., Nowata	1,194
Lowrie & Barnes, Robinson, Ill.	171
Lowry-Burns Corp., The, Muskogee	764
Lowry Oil Corp., Muskogee	6,312
Lucado Oil & Gas Co., Coffeyville, Kans.	359
Lucky Leaf Oil & Gas Co., Blackwell	598
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Lycoming Oil Co., Arkansas City, Kans.	89
Lynch, C. B., & Co., Tulsa	416
Lyon, Burt W. & Mary J., Los Gatos, Calif.	529
Lyons, Jake, Tulsa	135
Lyons Pet. Co., Tulsa	35,064
McAllister, C. T., Sapulpa	37
McBrayer, T. H., Okmulgee	68
McBride, W. C., Inc., St. Louis, Mo.	920
McCaskey, J. G., & C. E. Wentz, Trustees, Ponca City	558,060
McClintock, R. Otis, Tulsa	621
McCollum, A. D., Kansas City	98
McConnell, Grace M., Oklahoma City	149
McCormick, Matt, No. 2, Nowata	137
McCormick, J. A., Trustee, Muskogee	1,081
McCully Oil & Gas Co., Hominy	458
McCree Pet. Corp., Tulsa	1,824
McDonald, J. H., Muskogee	353
McDougal, D. A., Sapulpa	78
McFarlin & Chapman, Tulsa	653
McGill, H. R., Tulsa	1,709
McGuire, F. H., Guthrie	434
McKeon, P. G., Tulsa	2,181
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McKee & McFarland, Ardmore	184
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McLane Farm Oil Co., Tulsa	566
McMahon, C. L., Okmulgee	4,391

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Ross, Hugh, Estate, Tulsa	68
Roth, C. E., Independence, Kans.	2,071
Rounsavill, Book, Okmulgee	334
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Ruth Fuel Co., Bartlesville	935
Ryan Consolidated Pet. Corp., Bartlesville	17,939
Sandoma Oil Co., Tulsa	31,865
Sammel, J. B., & W. B. Stewart and others, Robinson, Ill.	601
Sanders Oil Co., Tulsa	1,590
Sanders Oil & Gas Corp., Tulsa	2,589
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Shuler, Isaac, Tulsa	84
Shuler & Fischer, Tulsa	1,265
Shuler, Isaac, & D. J. Gonyer, Tulsa	578
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Siebler, Ben, Cincinnati, Ohio	283
Sigana Oil Co., Cleveland	65
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Silurian Oil Co., The, St. Louis, Mo.	70,094
Simack Oil & Gas Co., Wichita Falls, Tex.	200
Simons, I. D., Tulsa	8,361
Simpson-Fell Oil Co., Ardmore	14,681
Sinclair Oil & Gas Co., Tulsa	1,252,105
Sitrin, Sam, Tulsa	43
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Skelly Oil Co., Tulsa	3,056,069
Skelton, L. S., Estate, Okmulgee	8,862
Skelton-Moore Oil Co., Bartlesville	8,914
Slick, T. B., Clarion, Pa.	668,983
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Smith, E. F. & Co., Bartlesville	289
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Southwestern Oil, Gas & Coal Co., Independence, Kans.	1,983
Southwestern Pet. Co., Tulsa	155,795
Southwestern Pet. Co., J. A. Lovell, Paul Lovell & W. T. Hastings, Tulsa	1,541
Southwestern Pet. Co., Phillip H. Lord Estate, Charles S. Lord & Henry C. Lord, Tulsa	4,017
Southwestern Town Lot Oil Co., Tulsa	188
Southwestern Utilities Corp., Independence, Kans.	3,603
Speary Bros. & Mills, Marietta	2,835
Sperata Oil Co., Bartlesville	852
Sprague Oil Co., Ardmore	1,803
Spring Oil Co., Independence, Kans.	2,228
Stager, J. A., Nowata	412
Stager & Cornelius, Nowata	895
Stake Oil Co., Independence	618
Standish Oil Co., Bartlesville	8,667
States Pet. Co., Tulsa	36
Stauffer, M. T., and others, Tulsa	184
Stebbins Oil & Gasolin Co., Tulsa	1,155
Stein, P. H., & M. S. Mussellem, Muskogee	490
Steinmeyer, George, Tulsa	22,279
Stephens, C. S., Coffeyville, Kans.	195
Sterling Gas & Oil Co., Columbus, Ohio	446
Stewart, C. E., Independence, Kans.	245
Steyner Oil Co., Bartlesville	16,773
St. Louis-Alluwe Oil & Mining Co., St. Louis, Mo.	149
Straight, Preston and others, Bartlesville	1,131
Stralem, C. I., Tulsa	832
Striker, John H., Tulsa	75
Strozier, Marshall, Fort Smith, Ark.	970
Studebaker, E. H., South Bend, Ind.	426
Sturm, H. L., Ardmore	694
Sullivan, C. T., Kansas City, Mo.	64
Sullivan, E. J., & W. C. Dickey, Bartlesville	1,521
Sullivan, M. J., Kansas City	145
Summit Oil Co. & Sand Fork Gas & Pet. Co., Bartlesville	557
Sunbeam Pet. Co., Tulsa	2,709
Sun Gasoline Co., Tulsa	159
Sunny Jim Oil Co., Tulsa	423
Superior Oil Corp., Lexington, Ky.	65,375
Suppes, C. E., Tulsa	335
Suppes, G. B., R. E. & C. E., Tulsa	34,335
Suppes & Breslin, Tulsa	2,771
Suppes Oil & Gas Co., Tulsa	191
Sutherland Pet. Co., Ardmore	23,806
Sutton, George, Prague	953
Swain, Guy, Bartlesville	225
Sweeney, J. F., Tulsa	609
Sweeney, J. F., & Co., Tulsa	7,533
Swindler-Papoose Oil Co., Tulsa	20,426
Sykes, C. E., Ardmore	1,822
Taft Oil Co., Independence, Kans.	2,037
Tait, S. W., Montpelier, Ind.	304
Tatum, Beverly A., Tulsa	6
Terrel Co., The, Terrell, Tex.	1,847
Test Oil Co., Bradford, Pa.	4,080
Terwilliger, C. H., Tulsa	6,374
Texas Co., The, Prod, Dept., Tulsa	862,479
Texas-Okla. Inv. Co., Independence, Kans.	1,620
Texas Pacific Coal & Oil Co., Thurber, Tex.	109,315
Texas Prod. Co., Independence, Kans.	194
Texmex Oil Co., Tulsa	4,047
32nd Oil & Gas Co., Ardmore	6,306
Thomas, F. V., Receiver, Bartlesville	48
Thompson, J. N., Tulsa	926
Thompson, J. N., Receiver, Tulsa	1,767
Thompson, J. W., Bartlesville	692
Thompson & Jordan, Okmulgee	216
Thompson, J. N., W. M., & Roy B., Tulsa	560
Thompson, Milton, Cushing	364
Thompson, M. W., Tulsa	1,909
Thompson, R. D., Okmulgee	231
Thompson, William P., Trustee Musctang Oil & Gas Co., Vinita	87
Thompson, W. M. & Roy B., Tulsa	69
Thompson & Welder, Cleveland	761
Thompson, Welder & Neal, Cleveland	4,034
Thompson Oil & Gas Co., Tulsa	4,704
Thurmond, T. A., Ardmore	2,337
Thurvan Oil Co., Bartlesville	722
Tidal Oil Co., Tulsa	340,980
Tidal Osage Oil Co., Tulsa	218,836
Tiger Pet. Corp., Tulsa	4,553
Tighe, J. P., Arkansas City, Kans.	802
Tighe-Osage Oil Corp., Arkansas City, Kans.	590
Titus, C. W., and others, Tulsa	64,424
Todd, E. G., Cleveland	63
Toney, Mina H., St. Louis, Mo.	198
Tracy, F. R., Tulsa	2,179
Trainer, J. E., and others, Salem, W. Va.	352
Travis, D. R., Tulsa	5,933
Travis, William W., Tulsa	50
Traywick, N. E., Okmulgee	149
Trefts, John C., Buffalo, N. Y.	712
Trimble & Howard, Tulsa	209
Troy, Josie E., Muskogee	46
Troy Oil & Gas Co., Sapulpa	46
Trumbo, A. C., Muskogee	99
Tull Oil & Gas Co., Yale	309
Tuloma Oil Co., Tulsa	11,554
Turley, G. W., Oklahoma City	732
Turner, T. C. & T. E., Mounds	4,134
Twichell, J. A., Okmulgee	161
Twin Hills Oil & Gas Co., Tulsa	1,220
Twin State Oil Co., The, Tulsa	544,565
Tyee Oil & Gas Co., Bartlesville	1,185
Tyler, D. M., Dewey	644
Tyler, H. F., and associates, Dewey	598
Tyrrell, H. C., Tulsa	244
Upland Oil Co., Tulsa	28
U. S. Oil & Gas Co., The, Tulsa	19,132
Vance, S. C., Tulsa	84
Van Dall Bros., Bartlesville	814
Vandervoort & Hoss, Piatt	674
Vandivort, W. M., Nowata	501
Van Horn, E., Chelsea	281
Van Moss Oil Co., Bartlesville	1,664
Van Nostrand, H. T., Trustee, Claremore	131
Vaughn & Twibell, Okmulgee	175
Vensel, F. E., Tulsa	190
Vensel, Elliott & Vensel, Tulsa	1,643
Vicmar Oil Co., Tulsa	3,482
Vowell-Jackson, Sapulpa	4,960
Wachob-Trumbo & McKay, Muskogee	154
Wade Oil & Gas Co., Marlow	735
Waite, Fannie C., Los Angeles, Calif.	1,638
Waite, W. W., Dewey	259
Walda Oil & Gas Co., Carlisle, Pa.	24,846
Walker, John M., Estate, John A. Baynes, Exec., Mounds	467
Walker, P. G., Jr., & O. K. Eysenbach, Tulsa	432
Walker, W. L., Tulsa	65
Walker Oil Co., Tulsa	2,345
Wall Oil Co., Tulsa	604
Wallace, J. C., Okmulgee	331
Wallace, J. M., Okmulgee	178
Walsh Oil Co., Tulsa	7,669
Ward Oil & Gas Co., Tulsa	2,625
Warner-Caldwell Oil Co., Titusville, Pa.	19,922
Warner, W. W., Nowata	213
Warren Co., Bartlesville	1,570
Warren Oil Co., St. Louis, Mo.	650
Washington, J. E., Tulsa	756
Watchorn Oil & Gas Co., Oklahoma City	4,609
Watkins, F. E., Trustee, Waurika	2,135
Waxler, R. A., Tulsa	2,991
Weart, J. F., Bartlesville	835

REPUBLIC

A Hundred Miles of Republic Line Pipe

The Texas Co., marketers of Texaco products are now completing a one hundred-mile line of Republic 10" pipe. This line has as its two terminals Louann, Ark. and Ardis, La. The above view was made as the line was being laid through a dense woods.

This is another instance of Republic pipe in the oil country where big producers and big production depend upon right equipment to get to market in the most efficient manner.

Write for prices today.

Tubing—Casing—Line Drive
Rotary Drill Pipe

REPUBLIC IRON & STEEL CO.

"General Offices:"

Republic Bldg., Youngstown, Ohio

SALES OFFICES:

Buffalo	**New York**	**Cincinnati**	**Dallas**
Boston	**San Francisco**	**Pittsburgh**	**Detroit**
St. Louis	**Philadelphia**	**Cleveland**	**Chicago**
			Birmingham

Look at that Network of Roots!

"The cost of ditching was a fraction of what hand work would have cost," says R. S. Lord, President, Hope Engineering & Supply Company.

Three Buckeyes were used in this 101-mile pipe line connecting Monroe and Alexandria fields, in Louisiana.

The machines cut through the continuous interlacing of roots **without assistance.** In many cases there was two feet of water in the ditch for miles behind the cutting wheel.

Yet the Buckeyes **kept right on going**—ripped right thru those heavy roots at a fraction of what it would cost to cut by hand. And think of the saving in time!

You can't beat a pipe line crew when a Buckeye sets the pace!

Let us **show** why Buckeyes more than pay their way on **any** pipe line job.

THE BUCKEYE TRACTION DITCHER COMPANY

Manufacturers of Pipe-Line Trench Excavators and Pipe-Screwing Machines

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Branch Sales Offices:

New York
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Buckeye

Weber, Howard, No. 5, Bartlesville.	1,113
Weber, Obins & Beattie, Bartlesville	672
Webster, G. W., Tulsa	679
Weis, Sigmund, Chicago, Ill.	197
Welch Gas & Oil Co., St.Ilwater	1,015
Welsh, J. D., Kansas City, Mo.	563
Wertzberger, D. D., Tulsa	1,101
Wesley, R. D., Norton, Kans.	58
West-Hazlett Oil Co., The, Independence, Kans.	2,154
Westerly Oil Co., Bartlesville	1,521
Western American Oil Co., Bartlesville	4,297
Western Oil Corp., Tulsa	16,008
Western Natural Gas Co., Tulsa	1,964
Western States Oil & Land Co., The, Casper, Wyo.	4,032
Westheimer & Daube, Ardmore	178,924
Westland Oil Corp., Tulsa	4,087
White Eagle Oil & Ref. Co., Wichita, Kans.	96,753
White Oil Corp., Houston, Tex.	55,565
Whitehill, B. F., Tulsa	1,384
Whitehill, H. J., Tulsa	161
Whitehill, Donovan & Whitehill, Tulsa	682
Whitehill, Donovan, Hayden & Whitehill, Tulsa	774
Whitehill & Glass, Tulsa	1,335
Whitehill, Smith, Shaw and others, Marietta, Ohio	1,616
Whitehall Pet. Co., Tulsa	1,204
Whiteside, R. B., Tulsa	224
Whittier, M. H., Tulsa	991
Wichita State Bank & Trust Co., Wichita Falls, Tex.	29
Wickett, K. L., Tulsa	517
Wilcox, H. E., Indianapolis, Ind.	46
Wilcox, H. E., R. V. McMullen, Joseph Loriaux, & H. G. Wilcox, Tulsa	81
Wilcox, H. G., & E. M. Oswalt, Tulsa	310
Wilcox, Oswalt & Wilcox, Indianapolis, Ind.	269
Wilcox, H. F., Oil & Gas Co., Tulsa	461,433
Wilhoit, J. C., No. 2 account, Kansas City, Mo.	3,804
Wilkinson, Eugene, Nowata	1,833
Williams, P. R., Wynona	1,148
Wilson, Hiram C., Tulsa	26,404
Wilson, J. H., Chicago Ill.	430
Wilson & Jackson, Sapulpa	34
Wineland Oil Co., Boynton	2,034
Winemiller, J. H., Tulsa	3,767
Winkler, C. C., Vincennes, Ind.	17
Winona Oil Co. of Del., Tulsa	39,502
Winters, M., Independence, Kans.	348
Winters Oil Co., Bradford, Pa.	1,007
Wise & Jackson, Sapulpa	5,707
Wiser Oil Co., The, Bartlesville	44,607
Wolfe, F., Tulsa	165
Wolfe, Frank Trustee, Tulsa	934
Wolfe Oil Corp, Bristow	5,741
Wolverine Pet. Corp., St. Louis, Mo.	568,639
Wood, T. J., Tulsa	1,390
Woodard, George E., Nowata	1,038
Woodard, Burkett & Woodard, Nowata	976
Woodard, Crenshaw & Woodard, (M. R. Garnett, Trustee) Nowata	453
Woodard, Woodard, Tools, Nowata.	75
Wright, A. P., Tulsa	931
Wright, J. H., Sapulpa	1,606
Wright Drilling Co., Sapulpa	133
Wrightsman Oil Co., Tulsa	2,145
Wylie, W. J., Bristow	2,073
Xetloc Oil Co., Denver, Colo.	204
Young & Wilson, Dewey	163
Zoch-Barnes Pet. Corp., Tulsa	8,194
SUPPLEMENTAL:	
Alluwe Oil Co., Nowata	8,168
Associated Oil Co. of Texas, Wichita Falls, Tex.	67
Atlas Pet. Co. and others, Kansas City, Mo.	178
Aymer, Charles, Nowata	424
Barber Oil Co., Tulsa	269
Beacon Oil Co. & Boston & Osage Oil Co., Bartlesville	3,695
Benbow & May, Muskogee	9
Big Four Oil Co., Independence, Kans.	152
Bird Creek Oil & Gas Co., Tulsa	826
Black, W. A., Montreal, Canada	63
Boop, Sitz, Glass & Calvert, Nowata	211
Brady, E. H., Tulsa	398
Brady, E. H., Fred Swanson, John Swanson & Dan Kelly, Tulsa	964
Campbell & Wolford, Tulsa	358
Campbell Oil Co., Tulsa	3,266
Canary, J. D., Littleton, Colo.	2,856
Canary & Canary, Littleton, Colo.	1,187
Carter, Falls, Plattsburg, Mo.	181
Champlin & Winkler, Inc., Holdenville	31,539
Cohn, M. M. & D. New York, N. Y.	91
Cole Oil Co., Tulsa	168
Corbin & Haver, Tulsa	1,284
Corbin Oil & Gas Co., Tulsa	785
Correne Oil Co., Tulsa	1,495
Cotton Farm Oil Co., Kansas City	1,054
Cox, Frank, Eugene, Ore.	69
Danna Oil Co., Bartlesville	1,007
Devonian Oil Co., Tulsa	55,827
Douglas Oil Co., Tulsa	169
Duffield & Howard, Tulsa	2,658
Dunn Oil Co., Tulsa	300
Emery, Lewis, Jr., & Sons, Bradford, Pa.	18,447
Fair, [illegible] (Omulgee	3,333
Fay Drilling Co., Tulsa	113
Fortner, Lucy J., Vinita	69
Foster, H. V., Bartlesville	30,361
Foster, H. V., & Foster & Davis, Inc., Bartlesville	818
Franklin Oil Co., Franklin, Pa.	354
Getty, George F., & San Joaquin Oil Co., Los Angeles, Calif.	5,846
Giddings, F. C., W. H. Gray, A. B. C. Dague, Charles F. Egan & R. A. Welch, Tulsa	890
Glass, Eva Payne & Pearl M. Harmon, Nowata	3,726
Great Southwestern Pet. Co., Oklahoma City	469
Grimes, Blair, and others, Tulsa	250
Grimes, Charles W., Trustee, Tulsa.	348
Grimes & Gillespie, Tulsa	17,350
Gurley, H. S., Blackwell	4,567
Halsell & Son Oil & Gas Co., Vinita	472
Hansen, Edward C., Tulsa	549
Harris, Strawn Oil Co., Ardmore	5,077
Haslett, Bradford & Frazier Bros., Eldorado, Kans.	1,526
Henson Prod. Co., Tulsa	1,224
Howard, O. P., Tulsa	2,547
Illinois Ref. Co., Cushing	4,561
Irelan, O. M., Sapulpa	423
Jennings, R. G., Pittsburgh, Pa.	3,626
Jolly, W. A., Okmulgee	229
Judson Oil Co., New York, N. Y.	3,656
Kawfield Oil Co., Cushing	2,430
Kemp, L. C., Milton Junction, Wis.	138
Kuhns, J. H., Tulsa	1,821
Lancaster & Grimes, Tulsa	344
Lenox Oil Co., Okmulgee	51
Leonard Pet. Co., Washington, Pa.	2,589
Lorraine Pet. Co., Tulsa	255,172
Louvain Oil Co., Bartlesville	53
March Oil Co., The, Tulsa	14,355
Marshall Oil Co., Tulsa	150
Mechling, C. A., Tulsa	206
Modern Oil Co., The, Wellsville, N. Y.	899
Moore, J. A., Nowata	60
Norton, L. B., Okmulgee	2,232
Osage Dev. Co., Bartlesville	5,669
Ottawa Oil Co., Wellsville, N. Y.	91
Overton, C. H., Tulsa	1,317
Overton, C. H., & G. H. Huford, Tulsa	620
Owsley, D. L., Tulsa	1,417
Painter, J. W., Nowata	330
Painter & Stager, Nowata	97
Painter & Stager & Higgins, Nowata	1,021
Parmenter, W. L., Lima, Ohio	2,224
Pelham Pet. Co., Tulsa	991
Pennhoma Oil Co., Pittsburgh, Pa.	99
Peters Pet. Corp., Tulsa	30,985
Phoenix Ref. Co., Tulsa	3,709
Pilgrim Pet. Co., Tulsa	2,466
Plains Pet. Co., Inc., Tulsa	4,121
Prince-Anderson Drilling Co., Okmulgee	53
Robertson, Glass & Harmon, Nowata	1,121
Sapulpa Ref. Co., Sapulpa	4,375
Sawyer, F. L., Trustee, Independence, Kans.	338
Schermerhorn, J. B., Minneapolis, Minn.	84,272
Schermerhorn-Young Co., Minneapolis, Minn.	31,920
Scott, Eura, Los Angeles, Calif.	3,035
Siaco Oil Co. and others, New York, N. Y.	419
Simons, G. A., Okmulgee	3,003
Simons, Marcia R., Okmulgee	681
Smith & Steinberger, Tulsa	3,038
Steil, J. A., Estate, New York, N. Y.	2,293
Steinberger, C. A., Tulsa	511
Stine, J. C., and others, Tulsa	1,737
Strimple, J. A., Janesville, Wis.	221
Sure Oil Corp., New York, N. Y.	119,117
Swanson, Fred & John, Chanute, Kans.	1,146
Urschel, C. F., Oklahoma City	13,602
Urschel, Flored S., Oklahoma City.	13,602
Verland Oil & Gas Co., New York, N. Y.	3,872
Wah-Shah-She Oil Co., Bartlesville	8,040
Warmack, George, & Henry Schurman, Fort Smith, Ark.	141
Wellsville Oil Co., Wellsville, N. Y.	1,495
Total	40,303,570

FILLING STATION BAN

FRANKLIN, Pa., Nov. 10. — City council unanimously passed on first and second reading an ordinance prohibiting the installation hereafter of any gasoline filling stations on the streets or public alleys of Franklin, and ordering the removal of those now situated thereon. It will come up for final passage in a month.

T. W. REDUCTION IN NEBRASKA

The Standard Oil Co. of Nebraska on November 10 reduced their gasoline tank wagon prices generally 2 cents throughout Nebraska. Due to a delay in securing definite information regarding the change the reductions were not made in the Tank Wagon tables of this issue. Two cents should be deducted from both the service station and tank wagon prices.

GAS IN COLORADO

CASPER, Wyo., Nov. 14.—The Union Oil Co. has struck gas at 4,285 feet 14 miles north of Fort Collins, Colo. The flow is estimated at 15,000,000 feet daily.

LAST MINUTE *from* OKLAHOMA

The Dixie Oil Co.'s No. 2 Foster, NE NW SW NW, Section 33-8-8, Seminole County, according to latest reports, was making 2,000 bbls. from sand at 3,142-53 feet. The same company's No. 2 Long, SW cor. SE NE, Section 32-8-8, made 873 bbls. in 24 hours from sand at 3,115-19 feet.

Croxton and others' No. 1 Millard, NW cor. SW, Section 6-23-3w, Garfield County, was abandoned at 3,198 feet with a hole full of water.

MEXICO FIELDS

(Continued from Page 50)

in Lot 4, is drilling in the San Felipe at 1,950 feet; No. 32, same, is drilling in shale at 925 feet; No. 36, same, is drilling in shale at 1,075 feet; and just above Cacalilao, in the Paciencia, No. 3 will cement 10-inch at 1,550 feet in shale.

Old Sectors

In the older sectors of the Panuco Field operations are as follows:

La Corona Petroleum Co.'s No. 72 Potrero del Ojital has cemented 10-inch in shale at 1,025 feet. East Coast Oil Co.'s No. 15 Los Potrerillos is drilling in the San Felipe at 1,965 feet. International Petroleum Co.'s No. 7 Tanchicuin is drilling in gray shale at 2,075 feet. New England Fuel Oil Co.'s No. 12 San Manuel is drilling in shale at 945 feet. Talvez Oil Co.'s No. 6 West Maguabes, which is being drilled by Hicks & Null, contractors, made exceptionally fast time as it spudded in and was running 8-inch at 1,260 feet in a week's time. The casing will be set at the depth noted in a limestone.

South Fields

In the South Fields, Huasteca Petroleum Co., (Mexican Petroleum) is spudding in for No. 35 Cerro Azul, and has the derrick up for No. 38. In Tierra Blanca No. 20 is drilling in a brown limestone at 2,168 feet, and No. 21 there is spudding. In Tres Hermanos No. 3-A is running 6-inch at 2,905 feet, in a brown shale and No. 6 is running the same size casing at 2,830 feet, in a similar formation. Over in Moralillo, just west of Juan Felipe, it has shut down at 3,852 feet in brown shale. In Juan Casiano, No. 10-A is drilling in the San Felipe at 2,121 feet; and No. 13, same, is drilling in a similar formation at 1,993 feet. La Corona Petroleum Co.'s No. 1, Lot 30 Comales, has set surface casing at 406 feet and has spudded in for No. 2 Los Cues. Cortez Oil Corp., No. 5, Lot 199 Amatlan, is drilling in a shell-streaked shale at 1,420 feet; and No. 3, Lot 189, same, is drilling in shale at 500 feet. International Petroleum Co.'s No. 41 Toteco, is drilling in shale at 1,483 feet; No. 42 is drilling in sandy shale at 1,095 feet; while down in the San Miguel, south of the Tuxpam River, No. 2 is drilling in hard gray shale at 2,322 feet. This latter test, it will be recalled, is an offset to the heavy gravity well this company finished there some months ago at a little over 3,000 feet, the oil of which, however, has not yet been exploited. Island Oil & Transport Corp., No. 6, Lot 177 Amatlan, is drilling in the San Felipe at 2,110 feet. Penn Mex Fuel Co.'s No. 2 Palo Blanco, west of the Agua Nacida, has cemented 8-inch at 2,440 feet in a limestone. Mexican Eagle Oil Co.'s No. 7 Palma Sola has been shut down for orders in a hard brown shale at 2,313 feet; No. 8, same, is drilling in gray shale at 1,155 feet. In the Los Naranjos, No. 24, Lot 132 Amatlan, is drilling in brown limestone at 2,473 feet; No. 29, Lot 131 Chinampa, is running 8-inch in shale and shell at 1,686 feet and down at Potrero del Llano No. 15 is running 10-inch at 916 feet in a brown shale.

Topila and Miscellaneous

In the Topila Pool, Bravo Drilling Co.'s No. 1, Lot 30, Pac. de Agua is showing considerable oil at 2,270 feet. La Corona Petroleum Co.'s No. 1 Tobalo has a fishing job at 1,634 feet in limestone; and No. 18 Topila is drilling in hard gray shale at 1,700 feet. Cia Pet. Financiera, No. 4, Lot 5, Pac. de Agua, is drilling in hard limestone at 2,105 feet. D. A. Williamson's No. 2, Lot 36, Pac. de Agua, is drilling to 2,275 feet, in the San Felipe, where it is gassing considerably and caving.

At Ebano, Mexican Petroleum Co. is moving in for No. 17 Chijol; and No. 18 there is drilling in limestone at 2,253 feet. Its No. 29 La Dicha is shut down for the time being at 1,455 feet; No. 30, same, is drilling in lime at 1,685 feet and No. 31 is rigged and ready to spud.

At Culebra, north of the Tuxpam River, Huasteca Petroleum Co.'s deep test, No. 2 is drilling in limestone at 3,332 feet.

In the Marland Field, Cia. Pet. Franco Espanola, No. 12 Limon is drilling in a brown limestone at 2,925 feet; and No. 13 is drilling in a gray lime at 1,490 feet.

In the Caracol district, Hummel & Frix are a little over 2,400 feet in No. 3, Lot 51, which is too deep for much hope. Allison Smith's No. 2, Lot 50 Caracol, is drilling in the San Felipe at 1,910 feet, making considerable gas. W. L. Smith and others' No. 1, Lot 41, Caracol, is waiting for 8-inch at 1,638 feet, also in the San Felipe.

WHITING MEMORIAL IS GIFT OF ROCKEFELLERS

(Continued from Page 78)

gion club room was unveiled, inscribed as follows:

"May we ever be guided by the preamble of our constitution. For God and country we associate ourselves together for the following purposes: To uphold and defend the Constitution of the United States; to maintain law and order; to foster and perpetuate a 100 per cent Americanism; to preserve the memories and incidents of our association in the great war; to inculcate a sense of individual obligation to the community, State and nation; to combat the autocracy of both the classes and the masses; to make right the master of might; to promote peace and good will on earth; to safeguard and transmit to posterity the principles of justice, freedom and democracy; to consecrate and sanctify our comradeship by our devotion to mutual helpfulness."

J. L. Dickinson, Jr., chairman of the National Rehabilitation Committee of the American Legion, and Frank Henley, State Adjutant of the Department of the Legion of Indiana, were the principal speakers at the dedicatory services.

There was a band concert by the Standard Oil Co. of Indiana band.

In the afternoon there was a meeting in the auditorium attended by Col. Robert W. Stewart, chairman of the board of directors of the Standard Oil Co. of Indiana; Dr. W. M. Burton, president of the company, and other members of the board and heads of departments. Eugene T. Lies, special representative of Community Service Headquarters, was the principal speaker. There was also a community dance in the general club room.

The Commercial Club of Whiting gave a dinner in honor of the Dedication Committee, at which John N. Van der Vries, Washington, D. C., manager of the Northern Central Division of the Chamber of Commerce of the United States, was the principal speaker.

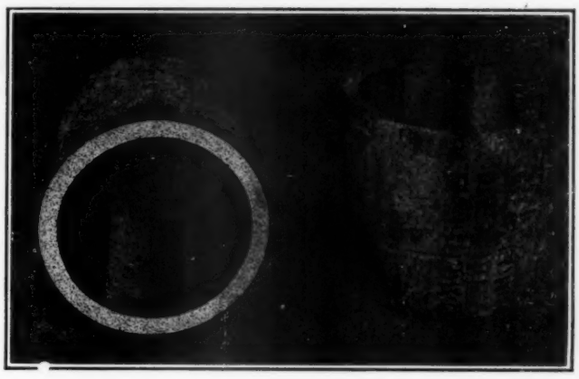
Trustees Named

The Community House will be under the supervision of a board of 11, composed of 5 trustees, who are employes of the Standard Oil Co. of Indiana at Whiting, and 6 citizens of the city.

J. E. Evans heads the list of trustees and is also chairman of the board of managers. The other trustees are T. S. Boyle, J. D. Melvin, H. F. Glair, Dan Gallagher. These trustees and the following citizens of Whiting compose the board of managers: Mrs. William Rought, vice president; Mrs. James Judson, secretary; John M. Thiele, treasurer; Mayor Walter Schrage, Joe Chilla, Judge R. E. Green.

NOT LIST S. O. OF NEW YORK

The application of the Standard Oil Co. of New York to list its shares on the New York Stock Exchange has been withdrawn because of a disagreement over the amount the company would be required to pay for the privilege of listing. The company, it was understood, contended the fee should be $22,500, while Stock Exchange officials were said to have interpreted the exchange rules require payment of $90,000. The stock will continue to be traded in on the curb market.



Short Lengths of Larger Sized Seamless Tubing

Short Heavy Wall Headers for Oil Refineries

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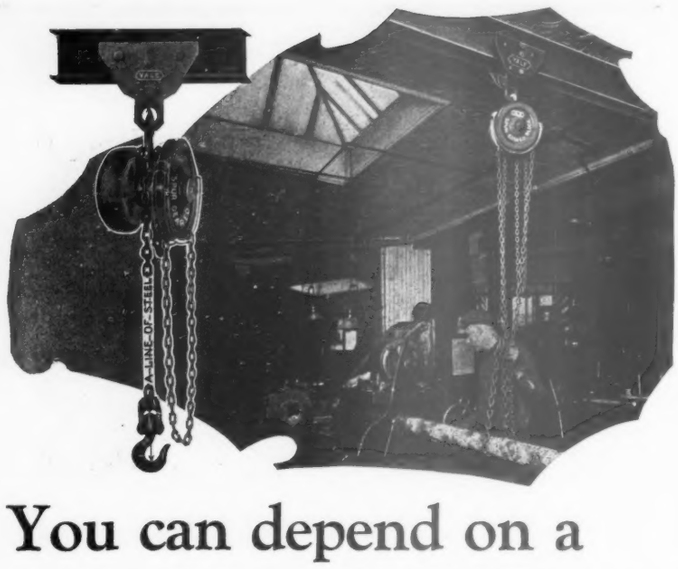

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YALE Hoisting and Conveying Systems

N. LOUISIANA-ARKANSAS

(Continued from Page 42)

drilled to 1,935 feet in No. 1 Patton, Section 32-15-16. The Block Oil & Gas Co. has derrick up for No. 1 Doc Bradford, Section 4-12-18. Bray-Hawthorne are drilling in shale at 1,735 feet in No. 1 Halford, Section 20-14-16.

The El Dorado Union Oil Co. tested strong oil and gas at 2,367 feet in No. 1 Shirley, Section 30-15-16, and is arranging to deepen. In Section 36-15-17 is arranging to set 2-inch with packer with 1,600 feet of oil and 10 feet of sand at 2,300 feet in No. 1 Smith. In the same section it has derrick up for No. 2 Smith.

The Forrest Oil Co. set 6-inch at 2,245 feet in No. 2 Hardin, Section 28-15-16; is arranging to set liner at 2,265 feet in No. 3 Hardin, Section 22-15-16; arranging to deepen No. 5 J. A. Cramer, Section 27-15-16, completed in May as a 300-bbl. well at 2,070 feet; also No. 1 Minor, Section 29-15-16, reported waiting for standard rig, which will be deepened from 2,265 feet with cable tools, and has No. 13 Mullins, Section 28-15-16, waiting on standard rig at 2,520 feet with 2,000 feet of oil in hole. The Grayburg Oil Co. has derrick up for No. 4 Patton, Section 30-15-16. The Gulf Refining Co. is drilling in blue sandy shale at 2,520 feet in No. C-1 Dawson, Section 10-15-18 and in shale at 1,070 feet in No. 1 Patton, Section 32-15-16.

J. L. Hines is drilling at 1,940 feet in No. 1 fee, Section 30-15-16. The Houston Oil Co. has derrick up for No. 1 Patton, Section 31-15-16 and is rigging up to drill No. 2 Reynolds, Section 27-15-16. Hunt and others set 6⅝-inch at 2,100 feet in No. B-1 Myar, Section 30-15-16.

Ernest Johnson has No. 1 Hughes, Section 21-15-16, waiting on standard rig at 2,270 feet. Johnson and others set 6-inch at 2,230 feet in No. 2 Fincher, Section 29-15-16, and the hole now stands at 2,290 feet with 1,000 feet of oil and 20 feet of sand.

Removed Rig

Keene & Woolfe abandoned and removed rig from No. 2 Myar Estate and set 10-inch surface and drilled to 1,150 feet in No. 4 Myar, Section 32-15-16.

The Leonard Petroleum Co. moved derrick off No. 1 Hicks, Sectino 27-15-16, standing at 2,025 feet.

The Magnolia Petroleum Co. set 6⅝-inch at 2,180 feet and drilled to 2,190 feet in No. 1 Patton, Section 32-15-16 and is swabbing with 24 feet of sand at 2,250 feet in No. 2 Smith, Section 31-15-16. The Owenwood Oil Corp. is arranging to set 6-inch at 1,865 feet in No. 1 Snyder, Section 34-15-15.

The Pace Trustees set 6-inch at 1,850 feet in No. 1 Watt (formerly reported as Giles and others) and drilled to 1,875 feet, in Section 30-15-16. Walter Petfier is drilling in rock at 1,915 feet in No. 1 Eagle Mills Co., Section 25-12-16. The Peer Oil Co. is arranging to deepen from 2,075 feet in No. 1 Mullins, Section 27-15-16, completed in May, 1923, with 150 barrels of production. The Pure Oil Co. is drilling in lime at 1,905 feet in No. 1 Moline Timber Co., Section 21-11-17. Reynolds and others are drilling at 1,920 feet in No. 1 Wells, Section 25-15-17, after setting 6-inch at 1,840 feet.

The Simms Oil Co. has 14 feet of sand with 1,200 feet of oil in hole at 2,031 feet in No. 3 Hildebrand, Section 28-15-15. The Smith Refining Co. has derrick up for No. 4 Fee, Section 30-15-16; is arranging to run tubing with packer to test 20 feet of sand in No. 1 La Grone, Section 30-15-16, at 2,280 feet and making heads; in the same section set surface 10-inch in No. 3 McRae and set 6-inch at 1,850 feet in No. 4 Myar Estate. Solmson and others sidetracked old liner and are arranging to set another at 1,970 feet in No. 1 Fee, Section 30-15-16, with 16 feet of sand. The Standard Oil Co. of Louisiana set 10-inch surface casing at 100 feet in No. 2 Solmson, Section 29-15-16. The Sun Oil Co. is drilling at 2,000 feet in No. 1 Patton and is bailing casing at 1,845 feet in No. 2 Patton, both in Section 31-15-16.

The Texas Co. is drilling at 1,630 feet in No. 2 Solmson, Section 29-15-16. The Transcontinental Oil Co. set 4½-inch to test 4½ feet of sand in No. 1 Minor, Section 20-15-16, at a corrected depth of 2,908 feet. The V. K. F. Drilling Co. is bailing with 8 feet of sand at 2,260 feet in No. 1 Patton and has derrick pattern on No. 2 Patton, both in Section 32-15-16. White and others are rigging up to drill No. 2 Watt, Section 30-15-16.

Stephens Field

One producing well was completed in the Ouachita area of the Stephens district during the week, the Ohio Oil Co. getting a 20-bbl. pumper at 2,095 feet in 12 feet of sand, in No. 1 Grayson, Section 19-15-19.

The Arkansas Invincible Oil Corp. set 6-inch casing at 2,130 feet in No. 2 Wesley, Section 18-15-19, and the Atlantic Oil Co. set 12½-inch casing at 100 feet in No. 3 John Webfer, Section 30-15-19. The Mutual Oil Co. is bailing to test 16 feet of sand at 2,144 feet in No. 4 Hamilton, Section 19-15-19, and the Standard Oil Co. set 6-inch casing at 2,100 feet in No. 1 W. Jones, Section 31-15-19.

Columbia County

Operations in the Columbia County area of the Stephens district resulted in the completion of one producing well, Haskell and others getting a 50-bbl. pumper in No. 7 Webfer, Section 24-15-20, at 2,172 feet.

The Atlantic Oil Producing Co. is arranging to pump No. 3 Milner, Section 24-15-20, at 2,130 feet. De Soto Hickman is drilling at 1,010 feet in No. 1 Fullenweider, Section 3-16-21.

Wells completed during the week and not yet put on the beam are the Magnolia Petroleum Co.'s No. 2 Hammond, in Section 25-15-20, at 2,102 feet; Turley & Tate's No. 3 Milner, Section 24-15-20, at 2,162 feet, and Wingfield and others' No. 3 Milner, in Section 23-15-20, at 2,152 feet.

Bellevue Field

Bossier Parish: The Humble Oil & Refining Co. started No. 21 on the Roy, Bliss & Weatherbee lease in Section 15-19-11, on October 31 and four days later the well was put to pumping, making 20 bbls. a day at 388 feet.

The Standard Oil Co. abandoned its Kendrick No. B-7 in Section 22-19-11 at 311 feet.

Bliss & Weatherbee are drilling at 397 feet in No. 10 fee, and the Humble Oil & Refining Co. is drilling at 80 feet in No. 20, Roy, Bliss & Weatherbee, in the same section.

Olmstead and others are drilling at 200 feet in No. A-10 Strange, Section 23-19-11, and R. O. Roy is arranging to pump No. 18 Scandland, in Section 15-19,11, and has derrick up for No. 22 in the same section. The Standard Oil Co. set 6-inch casing at 220 feet in No. 5 Bliss & Weatherbee, Section 10-19-11.

Caddo Parish

A completion of considerable importance was that of the Louisiana Texas Community Oil Co. on the French lease in Section 34-23-16. The well came in at 2,883 feet, pumping 55 bbls., but is making considerable salt water. This is the second well completed in this vicinity by the company and the new development is nearly 5 miles north of previous production in the Caddo Field.

An interesting test is being made by the Crude Oil Co., now rigging up to drill No. 1 Alexander & Ledbetter in Section 27-16-14. The test is 8 miles south of Shreveport and 2 miles northeast of Keithville in undeveloped territory.

The Dixie Oil Co. has 2,000 feet of oil in the hole in No. 53 Robertshaw, Section 13-21-15, and is building standard rig to pump. The well is in the deep sand area in the Pine Island district and is down 2,950 feet.

The Humble Oil & Refining Co. struck a strong gas pressure at 2,272 feet in No. 1 Youree Randolph, Section 24-20-

15, but is arranging to drill deeper. The Fortuna Oil Co. set 6-inch casing at 1,410 feet in No. 18 Robertshaw, Section 14-21-15, and the Muslow Oil Co. is drilling at 1,295 feet in No. 2 Brown fee, Section 32-21-15.

Claiborne Parish

The only development now in progress in Claiborne Parish is in the shape of two attempts to locate a deep producing sand in the old fields. The El Dorado Chief Oil Co. is down 2,752 feet in No. 1 McKenzie, Section 35-22-7, and the Ohio Oil Co. is drilling at 3,160 feet in No. 1 Teague, Section 10-23-7.

De Soto Parish

Snell & Kinnebrew got salt water in No. 1 Tompkies, Section 30-14-13, and the test will be abandoned. The well is 9 miles north of Mansfield in undeveloped territory.

Red River Parish

The Fortuna Oil Co. is drilling at 2,735 feet in No. 58 Pugh, Section 7-12-10, and at 1,885 feet in No. 16 Armistead, Section 24-12-11. The United States Drilling Co. is arranging to go back into No. 3 Fletcher, Section 10-12-10, formerly abandoned at 2,910 feet, and attempt to make a gas well at 1,100 feet.

Louisiana Wildcats

Bienville Parish: The Ohio Oil Co. has started drilling on the Bodcau Lumber Co. lease in Section 19-16-6, and set 12½-inch casing at 100 feet. The Standard Oil Co. is drilling at 2,300 feet in No. 1 Leona Scott, Section 21-17-8.

Bossier Parish: Perkins and others set 4½-inch casing at 2,575 feet in No. 2 Vance, Section 19-18-13; Sales & Walker set 6-inch casing at 2,625 feet in No. 3 Bolinger, Section 30-23-12; Skannel and others are drilling at 2,430 feet in No. 1 fee, Section 22-17-12, and Sneed and others at 350 feet in No. 1 Jones, Sections 23-18-11.

La Salle Parish: The Urania Petroleum Co. is drilling at 1,650 feet in No. 2 Urania, Section 20-10-2e.

Morehouse Parish: Feazel and others completed No. 2 Plemmons, in Section 22-20-5, making 26,000,000 feet of gas at 2,304 feet. Morris, trustee, completed No. 1 Snyder, Section 34-20-5, making 8,000,000 feet of dry gas at 2,255 feet.

The Consolidated Oil Co. set 6-inch casing at 2,295 feet in No. 1 Oden, Section 28-20-5. Cronin & McKenzie set 10-inch casing at 175 feet in No. 2 Perry, Section 13-20-4; Ladel and others set 8-inch casing at 945 feet in No. 16 fee, Section 21-20-5, and Morris, trustee, is rigging up to drill No. 1 White, in Section 28-20-5.

Ouachita Parish: Owens and others completed No. 1 Hare, in Section 28-19-5, making 14,000,000 feet of gas at 2,292 feet.

The Atlas Oil Co. is reaming to 3,068 feet in No. 2 West Virginia Timber Co., Section 3-18-5; the Chester Carbon Co. set 12½-inch casing at 240 feet in No. 1 Flournoy, Section 22-19-5, and the Consolidated Carbon Co. is drilling at 2,255 feet in No. 1 Wilson, Section 8-19-5.

The Consumers Gas Co. set 6-inch casing at 800 feet in No. 2 Richie, Section 8-19-5; the Cosmos Carbon Co. set 8-inch casing at 900 feet in No. 2 Hancock, Section 20-19-5, and the Fortuna Oil Co. is drilling at 1,250 feet in No. 1 Cole, Section 35-20-4.

Hosterman and others are drilling at 1,400 feet in No. 1 Collins, Section 31-19-5; Ladell and others set 12½-inch casing at 190 feet in No. 17 fee and are rigging up to drill No. 18 in Section 31-19-5, and Hayes and others are drilling at 500 feet in No. 2 Dixie Lumber Co., Section 54-17-3.

The Magnolia Carbon Co. is drilling at 1,085 feet in No. 1 fee, Section 18-20-5; Southern Carbon Co. is drilling at 2,090 feet in No. 24 fee, Section 27-19-5; The Texas Co. is drilling at 2,180 feet in No. 3 O'Neal, Section 33-19-4, and the United Oil & Gas Production Co. is drilling at 2,250 feet in No. 2 Balkum, Section 3-19-5.

The West Virginia Oil & Gas Co. lost the hole at 750 feet in No. 2 fee, Section 4-18-5, and set 10-inch casing at 195 feet in the second hole.

Union Parish: The most interesting wildcat in north Louisiana is the Davidson & Palmer well on the Frost Johnson lease in Section 12-23-1e, in the north end of Union Parish. The well is standing at 2,217 feet with 1,500 feet of oil in the hole, the oil testing 36 gravity. The well is showing considerable gas and some salt water and is drilled 7 feet into the sand. There is still considerable doubt as to whether this test will make a commercial well but it is almost a certainty that it heralds the discovery of a new pool. Davidson & Palmer have derrick up for a second test to be drilled on the Green lease in Section 19-23-1, nearly 5 miles southwest of the Frost Johnson well.

The Empire Gas & Fuel Co. is drilling at 1,560 feet in No. 1 Hamilton, Section 30-19-1, and the Union Power Co. has two wells on the Union Sawmill Co. lease, in Sections 32 and 21-21-4e, in which it is trying to kill a fresh water flow at 300 feet.

Webster Parish: The Texas Co. abandoned its test on the J. H. Merritt lease, in Section 5-22-10, which tested dry at 3,445 feet.

The Oil Field Gas Co. bailed casing dry and is running core barrel to 2,512 feet in No. 1 S. J. Merritt, Section 14-21-10, and the Ohio Oil Co. is drilling at 850 feet in No. 1 Martin, Section 34-23-10.

Arkansas Wildcats

Clark County: The American Drilling Co. is drilling at 530 feet in No. 1 Wilson, Section 15-8-22, and the Arkansas Oil Co. at 3,110 feet in No. 1 Barringer, Section 26-10-20. Dudley and others struck a promising oil sand at 680 feet in No. 1 Grayson & McLeod, Section 35-9-18, and the well is standing at this depth. Littlejohn & Hall are bailing to test at 980 feet in No. 1 Littlejohn, Section 22-8-18.

Dallas County: Conway and others are drilling at 1,050 feet in No. 1 Matlock & Higgs, Section 33-8-15.

Drew County: Graves and others are reaming to set 6-inch casing at 1,750 feet in No. 1 Karns, Section 10-13-6.

The Monticello Ridge Oil Co. is running core barrel at 2,240 feet in No. 1 Wilson, Section 10-12-7, and W. H. Rhodes and others are drilling at 380 feet in No. 1 Martin, Section 27-12-8.

Grant County: McKenzie & Emloy are drilling at 1,740 feet in No. 1 Prague, Section 26-5-12.

LaFayette County: The Kensaw Petroleum Co. has temporarily abandoned its test on the Red River Land Co. lease in Section 34-19-24, after drilling to a depth of 2,790 feet.

BRITISH GOVERNMENT TO SELL OIL HOLDINGS

British Government circles, says a London dispatch, expect the treasury to sell its holdings of Anglo-Persian Oil within a year, but at more than the £12,000,000, named by Sir Henri Deterding. The present market value of the 5,000,000 shares held is about £14,000,000, while in 1922 the Government was offered £32,000,000. The sale is the subject of a controversy between the Foreign Office and the Admiralty, the former insisting on the sale on the ground that Government oil holdings are a heavy diplomatic liability, while the Admiralty remembers it saved £10,000,000 during the war through the Anglo-Persian contract.

Announcement of negotiations has temporarily pegged the price of Anglo-Persian shares after a long, steady bear attack. Anglo-Persian Oil Co. has been slow to make headway in a marketing campaign and has suffered in competition with Standard Oil and Shell. A combination with Royal Dutch-Shell would make for extraordinary power, as experts agree that the Persian Field will probably not be exhausted by 1961, when the concession expires, while Shell and Royal Dutch marketing facilities are the best developed in Europe.

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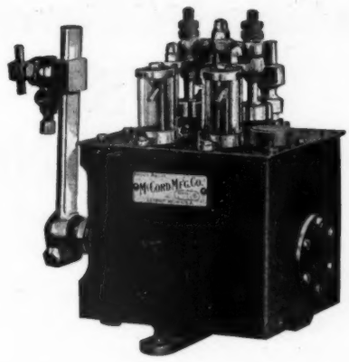

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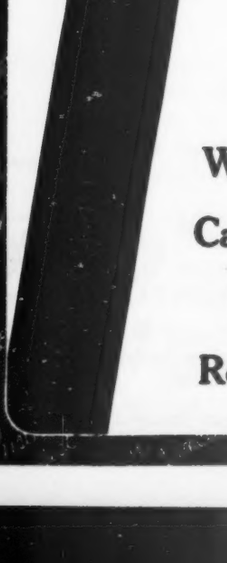

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EAST CENTRAL TEXAS

(Continued from Page 46)

capacity erected in the field, 35 are being built and 13 more tanks have been ordered. Not included in this are the tanks of the Sinclair, Prairie, Magnolia and other companies located outside the Powell Field, but being used to store Powell crude oil.

The greatest builder of tanks in the Powell Field has been the Humble Oil & Refining Co., which is quite natural, that company being the largest producer in the field. It has erected 86 big tanks and is building 33 more. Altogether these tanks will have a gross capacity of 7,545,000 bbls.

The Cobden Fuel Co.'s program calls for 28 55s, of which it has built and filled 20, and has ordered 8 more, which will give it a gross storage of 1,540,000 bbls.

The Tidal Oil Co. is preparing to take care of over 1,000,000 bbls. of crude, having already built seven tanks, is building two and has ordered five more.

The Magnolia Petroleum Co. has a big tank farm at Corsicana on which it started to build tanks at the opening of the field, that company having been on the ground with a pipe line when the big production began to manifest itself early in the summer.

Over 24,000,000 bbls. of crude is stored in the East Central Texas Field, which was produced in Mexia, Currie and Powell.

The following is the storage program in Powell:

POWELL FIELD STORAGE PROGRAM

Company and farm—	Present program	Sizes	Capacity	Comp.	Erect.	Ord.
Humble O. & R., Hill	40	80,000	3,200,000	30	10	0
Humble O. & R., Hill	40	55,000	2,200,000	30	10	0
Humble O. & R., Ealy	16	55,000	880,000	3	13	0
Humble O. & R., Chapman	10	55,000	550,000	10	0	0
Humble O. & R., Penn	10	55,000	550,000	10	0	0
Humble O. & R., Powell Sta.	3	55,000	165,000	3	0	0
Total	119		7,545,000	86	33	0
Humphreys Oil Co., McKie	1	55,000	55,000	1	0	0
Humphreys Oil Co., McKie	1	55,000	55,000	1	0	0
Total	2		110,000	2	0	0
Atlantic O. P. Co., Ealy	5	55,000	275,000	5	0	0
Atlantic O. P. Co., Ealy	3	80,000	240,000	3	0	0
Total	8		515,000	8	0	0
Tidal Oil Co., Bressie	11	80,000	880,000	6	0	1
Tidal Oil Co., McKie	1	55,000	55,000	1	0	0
Tidal Oil Co., McKie	2	80,000	160,000	0	2	0
Total	14		1,095,000	7	2	1
Sinclair P. L., Powell Sta.	2	55,000	110,000	2	0	0
Sinclair P. L., Penn	5	55,000	275,000	5	0	0
Total	7		385,000	7	0	0
U. S. Tex. Oil, Miles	5	55,000	275,000	5	0	0
Cobden Fuel Co., Gibson	28	55,000	1,540,000	20	0	1
Prairie P. L. Co., Station	2	5,000	10,000	2	0	0
Total	185		11,475,000	137	35	13

Status of Outside Tests

The Sims Oil Co.'s No. 1 Boyd, Meador survey, which was dry at 2,962-68 feet, was drilled to 2,985 feet and baled down. The hole filled with oil 700 feet and it will make a small well.

The Tidal Oil Co.'s No. 1 Bressie, Bragg survey, an extension test, was drilling in chalk at 2,410 feet on Saturday morning. It got the top of the chalk at 2,360 feet, 300 feet lower than the average for the field.

An important test on the Barron farm, Harris survey, that of Collins & Wheelock got sand at 2,953-85 feet. It would not flow but there was 1,500 feet of oil in the hole. It will be drilled deeper. This well is on the southeast side of the line of operations through the Harris survey and offsets the Gulf Production Co.'s Barron lease, which is in the line of production and has yielded some notably good wells.

A careful survey of the leases on the Mathews and Harris surveys made in the last week failed to bring to light any wells that were showing cut oil. All the wells on both surveys are flowing through chokers.

Two important tests in the Richland district are reported to have set pipe and are expected in daily. McDonald and others have one on the Dr. A. N. Brown farm, White (upper) survey and Miller & Lewis have the other on the Swink farm, on the same survey. Another Navarro wildcat with the pipe set at 3,307 feet is the Ranger Vindicator Oil Co.'s No. 1 Thornton, Hazard survey.

Recent Completions

The following important completions were reported since the late review last week:

Humble Oil & Refining Co.'s No. 5 Cerf, Smith survey, sand at 2,915-68 feet, 900 bbls.

Humble Oil & Refining Co.'s No. 16 Humphreys, Smith survey, sand at 2,882-2,961 feet, 1,000 bbls.

Humble Oil & Refining Co.'s No. 11 Davis Barry survey, sand at 2,920-68 feet, 2,500 bbls.

Gulf Production Co.'s No. 5 Barron, Harris survey, sand at 2,964-82 feet, 1,000 bbls.

Gulf Production Co.'s No. 7 Crews, Harris survey, sand at 2,939-87 feet, 7,500 bbls.

Skelly Oil Co.'s No. 1 Keith, Mathews survey, sand at 2,955-82 feet, 7,000 bbls.

Humble Oil & Refining Co.'s No. 12 Kent, Smith survey, sand at 2,856-2,945 feet, 1,900 bbls.

Roxana Petroleum Corp.'s No. 5-A McKie, Buffington survey, sand at 2,860-2,948 feet, 135 bbls.

Humble Oil & Refining Co.'s No. 9 Humphreys, Smith survey, sand at 2,872-2,958 feet, 2,830 bbls.

Humble Oil & Refining Co.'s No. 9-B Ramsey, Smith survey, sand at 2,907-53 feet, 1,800 bbls.

Humble Oil & Refining Co.'s No. 12 Davis, Barry survey, sand at 2,924-70 feet, 2,400 bbls.

The Texas Co.'s No. 10 Fleming, Harris survey, sand at 2,928-62 feet, 9,000 bbls.

Tidal Oil Co.'s No. 6 Crews, Harris survey, sand at 2,933-76 feet, 6,000 bbls.

Humphreys Oil Co.'s No. 56 McKie, Broyles survey, sand at 2,919-44 feet, 365 bbls.

Gulf Production Co.'s No. 3 Crews, Harris survey, sand at 2,936-81 feet, 7,200 bbls.

R. E. Brooks' No. 3 Cerf, Smith survey, sand at 2885-2,960 feet, 3,000 bbls.

Fourteen Wildcat Wells Abandoned

Fourteen East Central wildcats in Anderson, Cherokee, Falls, Van Zandt, Williamson, Hunt, Limestone, Milam, Red River and Raines Counties have been abandoned, some of them unquestionably dry holes and others abandoned at depths that did not make them real tests. The following list of dry holes includes also the last record of a number of active wildcat drilling wells:

In Anderson County, J. F. Williams and others' No. 1 Parker was abandoned at 3,690 feet. The Rosser Petroleum Co.'s No. 1 Brooks & Auld was abandoned at 4,170 feet. Palestine Oil & Gas Co.'s No. 1 Monning Plant was abandoned at 1,687 feet.

In Cherokee County, the Coolington Drilling Co.'s No. 1 Clapp was abandoned in lime at 2,554 feet.

In Falls County, the Texola Petroleum Co.'s No. 1 Harlin, Mathews survey, was abandoned at 3,168 feet.

In Van Zandt, County the Terrell Oil Corp.'s No. 1 Dunbar, Vansickle survey, was last reported drilling at 2,415 feet. The Transcontinental Oil Co.'s No.

J. Rice, Murry survey, was abandoned after drilling to 4,430 feet.

In Williamson County, the Magnolia Petroleum Co.'s No. 1 Stellos, Kimbo survey, was abandoned at 3,290 feet.

In Hunt County, the Tri Cities Oil & Gas Co. No. 1 Haynes, McWilliams survey, was abandoned at 3,331 feet.

In the Currie district, Navarro County the Hughes Development Co.'s No. 3 Morrow, Currie survey, was abandoned at 3,182 feet.

In Milam County, Guberson and others' No. 1 Posey, Moore survey, was abandoned in lime at 3,885 feet. Milano Pluitt's No. 1 Ashley, Robertson survey, was last reported drilling below 450 feet. Williams & Hill's No. 1 Starks, Robertson survey, was abandoned in shale at 2,200 feet. The Twin Cities Oil & Development Co.'s No. 1 Diamond, Bremond, Tiendo survey, was last reported drilling at 2,852 feet.

In Red River County, Brewster & Haynes' No. 1 Dinviddie, Anderson survey, was abandoned at 1,840 feet. O'Bannon Bros.' No. 1 Wortham, Harty survey, was abandoned at 3,200 feet. Rigging Oil & Gas Co.'s No. 1 Garland, Hogley survey, was abandoned at 1,240 feet.

OKLAHOMA FIELDS

(Continued from Page 38)

The Gypsy Oil Co.'s No. 3 Sand, SE cor. Section 4-27-5, was making 70 bbls. an hour from sand at 2,868-2,924 feet. The Phillips Petroleum Co.'s No. 5 Club, NW cor. NE, Section 9-27-5, made 74 bbls. an hour for the first 24 hours from sand at 2,929-53 feet. The same company's No. 6, NE cor. NW, same section, was making 60 bbls. an hour 20 feet in the sand topped at 2,925 feet. The same company's No. 2 Club, NE cor. NW NE, Section 9-27-5, was drilling at 2,922 feet.

In the Tonkawa area most of the activity was confined to shooting old wells. The Comar Oil Co.'s No. 7-B Endicott, Southeast of Wewoka in Seminole County, the Magnolia Petroleum Co. was drilling No. 1 Morgan, SW cor. SE SW Section 21-8-8, at 640 feet. The Dixie Oil Co.'s No. 2 Swift, NW cor. SE NE, Section 32 8-8, was making 950 bbls. from sand at 3,115-19 feet. Lewis & Clark's No. 1 Long, SW cor. NE SW, Section 33-8-8, was flowing 26 bbls. an hour for 24 hours from 2 feet in pay sand topped at 3,216 feet.

The Independent Oil Co. and Sinclair Oil & Gas Co.'s No. 1 Walker, SE cor. Section 29-8-8, was making 120 bbls. an hour 9 feet in sand topped at 3,110 feet.

In the Osage, the Comar Oil Co.'s No. 1 Mehojah, SE cor. SW, Section 4-27-5, had 2,000 feet of oil in the hole 1 foot in the sand topped at 2,948 feet, and was estimated to be good for a 75-bbl. pumper. This well is a disappointment as it offsets the Gypsy Oil Co.'s No. 4 Sands and the Phillips Petroleum Co.'s No. 5 and No. 6 Club.

The Phillips Petroleum Co.'s No. 2 Taylor, CNL NE NW NE, Section 9-27-5, was drilling at 2,922 feet with a show of oil on top of sand at 2,910 feet. The same company's No. 4 Taylor, NE cor. same section, made 525 bbls. during the first 24 hours and settled to a 400-bbl. production from sand at 2,906-63 feet, after topping a gas sand at 2,903 feet. The same company's No. 6-A Taylor, NE cor. NW, same section, made 180 bbls. the first 2 hours, 20 feet in sand topped at 2,925 feet, after making 3,000,000 feet of gas from sand at 2,931-40 feet. First oil was struck at 2,942 feet.

GROUP 3 REFINED MARKET UNSETTLED

(Continued from Page 22)

but so far as known very few orders, if any, have been placed at that figure. The usual pressure will be brought to bear by these buyers to lower the New Navy prices. It is freely predicted that the price will be down to 6 cents by the end of the week with lower prices to follow.

Some market observers state that it will be impossible to keep the spot market from slumping to the present marginal contract around 5 cents. It will be recalled in this connection that in August, when the Standard of Indiana tank wagon prices were reduced 6.6 cents the spot market on New Navy was approximately 2 cents higher than the marginal contract basis. It proved to be impossible to maintain this difference and the spot prices were lowered to the marginal contract price where they were firm for several weeks.

If there was any strength to the gasoline market this development could be avoided, according to the opinion of many in this group who keep in close touch with market developments. But the gasoline market still merits the term "weak" and, barring developments which cannot be foreseen at this time, it is doubtful if refiners will be able to prevent a further gradual lowering of prices.

There will be no large amount of New Navy available from Group 3 refiners over the remainder of the month. As shown by the weekly statistical table of the Western ePtroleum Refiners' Association given elsewhere in this issue stocks are not large and the movement generally satisfactory. The further lowering of prices, if it develops, will be brought about by outside competitive conditions, as has been the case for several weeks.

The higher gravity gasolines have also been lowered slightly. There have been no large orders placed during the past week but the movement in small shipments continues fair. Some refiners report a heavy movement to domestic buyers. A few scattered orders of 64-66,

(Continued on Page 115)

Powell Reaches New High Production, but Cut Oil Is Bad Sign

CORSICANA, Tex., Nov. 14.—The Atlantic Oil Producing Co., The Texas Co., and Humble Oil & Refining Co., opened their choked-in wells for one day and shot the production of the Powell Field up to 345,931 bbls. for 24 hours. This is very likely the peak of production in the field, although the Skelly Oil Co.'s No. 1 Keith, had it been opened with the others, would have increased the production close to 350,000 bbls. The Skelly well is pinched down to 250 bbls. an hour, and it is generally regarded as a 10,000-bbl. well.

Four of the five wells on the Gulf Production Co.'s Barron lease on the Harris survey, in the richest part of the whole field, are showing water and b. s., ranging from 2 to 12 per cent.

Only 12 new locations have been made in Powell in the last 7 days.

The Webster & Pickens test on the Boyd farm, Bragg survey, has sand at 2,942 to 2,977 feet, but they will not complete the well until it has pipe line connections. It is believed it will make a producer, but of what size cannot be safely estimated.

The Empire Gas & Fuel Co.'s No. 2 Sweatman, in the northeast corner of the farm, Harris survey, is a failure. It had salt water at 3,001-05 feet. This and the Sims Oil Co.'s No. 1 Keith show the end of production on that side of the field.

Elliott and others' No. 1 Hill, Humble tank farm, Smith survey, is a 3,500-bbl. initial producer at 2,873-2,915 feet and Parker and others' No. 1 Cerf, Smith survey, started at 2,000 bbls. at 2,877-2,945 feet. These wells prove up a number of locations between them and other producing wells.

The Tidal Oil Co.'s No. 3 Crews, Harris survey, got sand at 2,928-78 feet and made 5,000 bbls. the first 24 hours.

The Gulf Production Co.'s No. 6 Crews started at 2,500 bbls. at 2,950-77 feet.

The Humble Oil & Refining Co.'s No. 6 Cerf found sand at 2,905-68 feet, and an 1,800-bbl. initial production.

Garland Kent's No. 5 Kent, (R. D. Fleming) is a 5,000-bbl. well at 2,897-2,943 feet.

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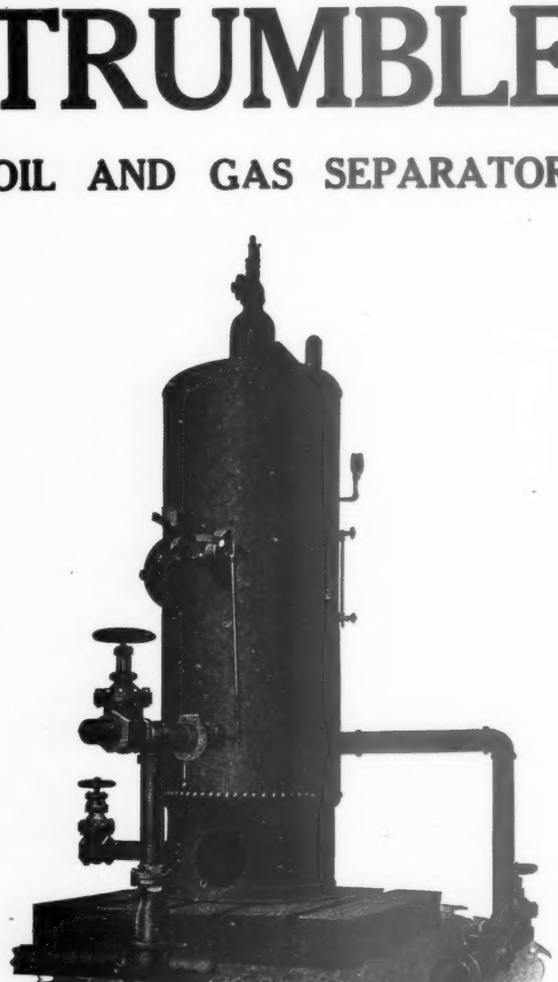

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ILLINOIS OIL AND GAS FIELDS SHOWN IN STATE SURVEY MAPS

The close association of oil to rock structure has been definitely recognized by geologists, and this principle forms the basis for much of the work of the Illinois Geological Survey in the study of oil exploration and development in Illinois. A considerable area has been systematically covered, and as a result of recommendations through bulletins and press notices of favorable structure by the survey, six oil pools in Illinois have been opened.

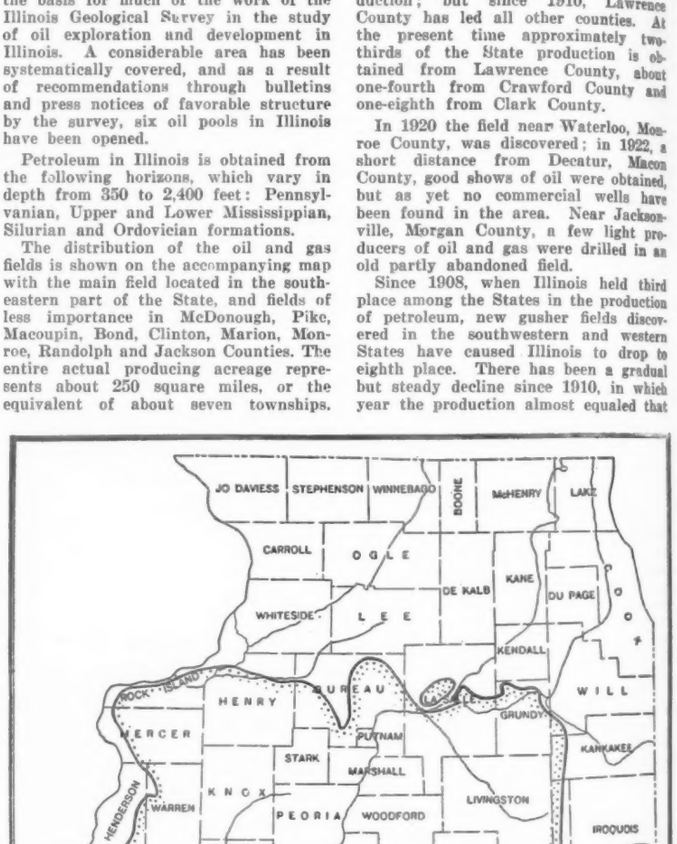
Petroleum in Illinois is obtained from the following horizons, which vary in depth from 350 to 2,400 feet: Pennsylvanian, Upper and Lower Mississippian, Silurian and Ordovician formations.

The distribution of the oil and gas fields is shown on the accompanying map with the main field located in the southeastern part of the State, and fields of less importance in McDonough, Pike, Macoupin, Bond, Clinton, Marion, Monroe, Randolph and Jackson Counties. The entire actual producing acreage represents about 250 square miles, or the equivalent of about seven townships.

Until 1907, Clark County was the greatest producer; from 1907 to 1910, Crawford County ranked first in county production; but since 1910, Lawrence County has led all other counties. At the present time approximately two-thirds of the State production is obtained from Lawrence County, about one-fourth from Crawford County and one-eighth from Clark County.

In 1920 the field near Waterloo, Monroe County, was discovered; in 1922, a short distance from Decatur, Macon County, good shows of oil were obtained, but as yet no commercial wells have been found in the area. Near Jacksonville, Morgan County, a few light producers of oil and gas were drilled in an old partly abandoned field.

Since 1908, when Illinois held third place among the States in the production of petroleum, new gusher fields discovered in the southwestern and western States have caused Illinois to drop to eighth place. There has been a gradual but steady decline since 1910, in which year the production almost equaled that



The Oil and Gas Fields of Illinois in 1923

of the banner year, although in the past several years this decline has become more gradual, due to the long life of the average Illinois oil well.

The policies of the Illinois Geological Survey have been broadly shaped to include the investigation of all fundamental problems in the geology of Illinois, the topographic mapping of the State, and the application of the results of such geologic and topographic work to the development and conservation of the resources of the State.

F. W. DeWolf, Chief of the Illinois State Geological Survey for the past 14 years, resigned recently to become the chief geologist of the Humphreys Oil Co. in Texas, and Morris M. Leighton, formerly of the University of Illinois, has been appointed his successor.

Gasoline Does Not Cause Formation of Carbon in Cylinders

By Dr. A. P. Bjerregaard
(Chief Chemist, Empire Refineries, Inc.)

Carbon in the cylinders of an automobile is never caused by the gasoline but is only produced by the lubricating oil. Even when the explosion of the gasoline produces a black smoke due to too little air this black smoke being so finely suspended in the explosion vapors, is all expelled from the explosion chamber. On the other hand, lubricating oil that does not evaporate readily from the explosion chamber will naturally remain upon the walls and finally become carbonized thereon. This is especially true of the heavy oils which it has become so much the fashion to use nowadays. In passing it may be said that these heavy oils have absolutely no advantage in the explosion cylinder as compared to a thin oil of about 200 viscosity. This last is as good or better for lubricating the walls of the cylinder than a heavier oil. The heavy oils are made by mixing undistilled residual oils, commonly called cylinder stocks, (the cylinder in this name refers to steam cylinders for which the oil is especially adapted) with thinner oils. When subjected to heat the thin oils evaporate and leave no carbonaceous residue, but the cylinder oils do not evaporate, and leave, therefore, a heavy carbonaceous residue.

It is sometimes found that when a car is started after standing a while that it does not start up readily and the spark does not start the explosion as promptly as may be desired. This is most commonly due to the fact that the gasoline which was supplied to the vacuum tank and to the carburetor just before stopping the engine at the conclusion of the previous run has been standing in the vicinity of the hot engine for a period of time and therefore naturally, the lighter ends have been driven off by the heat of the engine. It becomes necessary to replace this partly evaporated gasoline by fresh gasoline before the engine can work normally. This is not the fault of the gasoline but is due to the circumstances in which the gasoline has been placed. In fact the better the gasoline the more liability there is of this difference in action between starting and normal running.

Cause of Bad Odor

Some people insist upon having gasoline supplied to them that has a pleasant odor. That is a very irrational requirement. The odor of the gasoline bears no relation whatever to the odor that comes out of the exhaust pipe. That which causes a bad odor from the exhaust pipe is incomplete combustion of the fuel in the engine and this in turn is due to the presence of insufficient air or to dirty spark plugs.

Sometimes, also, the demand is made that the gasoline shall be "sweet" to the "doctor" test. This is also a perfectly irrational test since the reaction of the gasoline to this test bears no relation whatever to the usefulness of the gasoline as a motor fuel. The fact of the matter is that the process employed in the refinery for removing those traces of substances which cause the positive "doctor" test also results in actually deteriorating the quality of the gasoline so that as a matter of fact a gasoline which is not sweet to the "doctor" is almost always better than a gasoline which is sweet to the "doctor." It is unnecessary in this article to go into the details of the causes for this situation but it is well known to those familiar with refinery products.

Gravity No Indication

Some type of gasoline, especially after they have been exposed to sunlight in filling station glass bowls, contain small amounts of volatile coloring substances which communicate to the gasoline a faint yellowish tint scarcely noticeable. The presence of this volatile coloring matter introduces no objectionable features into the gasoline, and gasoline should not be considered to be unsatisfactorily merely because it has a faint trace of yellow or straw color. However, it is not meant to say here that all discolored gasoline will be entirely satisfactory, since if the discoloration is due to the presence of nonvolatile impurities such as heavy lubricating oils, the gasoline may possibly not act in a satisfactory manner on account of the presence of such nonvolatile substances.

Another point that needs to be considered in this connection is that of gravity. Sometimes it is said that gravity is an indication of the quality of gasoline. This is not so at all. Gravity is no indication whatever of the quality of gasoline when purchased in the open market. Light gravity gasolines not only are not better than heavier gasolines, but as is well known the light gravity gasoline will give less mileage per gallon than heavier gravity gasoline will. In cold climates in winter it is desirable to have a very light gravity gasoline, otherwise trouble may be experienced in starting.

RIVER ROYALTIES TO INDIANS?

WASHINGTON, D. C., Nov. 12.—When Congress convenes in December, Congressman Elmer Thomas, of the Sixth Oklahoma district, will introduce a bill which he has prepared, providing that the United States turn over to the Kiowa, Comanche and Apache Indians of Oklahoma all funds derived from bonuses or royalties on oil and gas produced in the south half of the Red River, on what the Supreme Court has held to be the public domain of the United States.

The bill provides for the enrollment of all children of these tribes born since October 31, 1920, they to share in the distribution of these funds. The Indians claim they are entitled to this land through treaties made long before the State was created, but they feel it will be quicker to get this bill through Congress than to undertake to win through a lawsuit.

TIME WELL SPENT

The time spent in writing a description of good material which you would like to procure at a reasonable price will be well spent if you mail it to The Oil and Gas Journal Classified Wants Department for next Thursday's issue.

The Classified Wants Section will help you to get just what you want, as the students of the Classified Section are great in number and control the buying or selling of a large portion of the material used in the oil and gas industry. Let your fellow reader help you. He can if you put your advertisement in the Classified Wants Section.

OIL REPORTED IN VENEZUELA

An Agencia Americana cablegram states: In the Guasdualito district (North-West Territory) discoveries of oil deposits are reported. The Government intends to dispatch a geological surveying expedition there.

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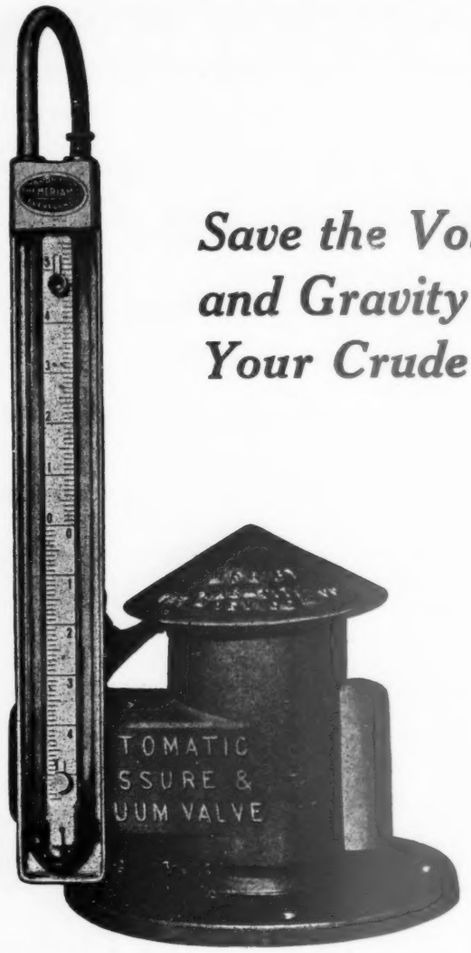

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PAWHUSKA, OKLAHOMA

Late Fields

(Continued from Page 56)

2,223-40 feet; No. 24 Blubaugh, C SE SW, same section, was making 254 bbls. naturally from sand at 2,540-2-610 feet; No. 2-A Blubaugh, SW cor. SE, same section, was drilling on top of the sand at 2,568 feet; No. 5 Blubaugh, C NW SE, same section, an old well, was drilling in the sand with a hole full of water at 2,245-80 feet.

In Stephens County, the Daisy Belle Oil Co.'s No. 1 Darnell, NE cor. SW SW, Section 11-1n-5w, was dry and abandoned at 1,362 feet. Kedney McKinney's No. 2 Chism, SW cor. NW NW, Section 13-1n-5w, was dry and abandoned at 960 feet. The Magnolia Petroleum Co.'s No. 5 Wilson, CEL SE SW, Section 17-2s-7w, was dry and abandoned at 2,710 feet. The Safety First Oil Co.'s No. 6 Rockwood, NW cor. NE SW, Section 20-1s-8w, had a showing estimated good for 75 bbls. from sand at 2,045-56 feet.

In Carter County, N. L. Amster's No. 2 Duncan, CSW SE NE, Section 25-2s-3w, was making 300 bbls. from sand at 2,106-25 feet. The Franklin Oil Co.'s No. 1 Gallagher, CNE SW NE, Section 25-2s-3w, was making 950 bbls. naturally from sand at 2,007-70 feet. The same company's No. 2, CSE SW NE, same section, made 250 bbls. from sand at 2,256-86 feet and was cleaning out at 2,295 feet. The Southwestern Oil Co.'s No. 2 Wolfe, CSE SE SE, same section, was making 100 bbls. from three sands at 2,690-2,700, 2,735-45 and 2,785-2,810 feet.

In Love County, the Union Petroleum & Supply Co.'s No. 1 Starrett, CSL SW NW SW, Section 27-6s-2e, was dry and abandoned at 3,800 feet.

Near Anadarko, in Caddo County, Rucker and others' No. 2 Heim, CWL SW NE SE, Section 24-7n-9w, was dry and abandoned at 850 feet. Nells Cristion's No. 2 Cutshall, SE cor. NW SE, Section 5-5n-9w, was dry and abandoned at 2,150 feet.

In Grady County, Hagerling and others' No. 1 Earl, C NE NE, Section 4-5n-6w, was dry and abandoned at 3,031 feet.

EAST CENTRAL TEXAS

CORSICANA, Tex., Nov. 13.—With 452 wells producing, some of them choked in, the daily output of the Powell Field was 305,670 bbls. early this week.

It has been figured that the field has to date produced 10,000 bbls. to the acre.

There are 10 rigs up, 104 active drilling wells and 60 wells on top of the sand with pipe set, a total of 174 completions. This is a falling off in operations from the condition of the field at the close of The Oil and Gas Journal's October report of operations, when there were 60 rigs and 135 wells drilling, a total of 195 operations. This week's reports on new derricks shows a much smaller number of new operations than completed wells. The older part of the field is pretty well drilled up.

The Humphreys Oil Co.'s production has fallen to 12,670 bbls. a day, which is an indication of how production falls off on leases where gusher wells can no longer be looked for. All the Humphreys wells are pumping.

The Gulf Production Co. is working on its new 6-inch pipe line from the field to a connection with its main line. The Humble and The Texas pipe lines are running full. The Cobden Fuel Co. is running 36,000 bbls. a day through the Magnolia pipe line to Fort Worth.

The Tidal Oil Co.'s No. 1 Bressie, an extension test, was drilling at 2,435 feet in Austin chalk.

The Texas Co. will drill a test near the town of Navarro. The company has bought a half interest in the Republic Oil Co.'s J. L. Autry farm, Autry survey, and has a derrick up 467 feet west of the southeast corner of the Gulf Production Co.'s 50-acre Jackson lease. Geologists have passed favorably on that part of the district.

The following completions were reported after the close of the regular field report:

The Texas Co.'s No. 6 Fleming, sand at 2,916-82 feet, 2,500 bbls.

Humble Oil & Refining Co.'s No. 1 B. Cerf, Smith survey, sand at 2,874-2,964 feet, 215 bbls. the first hour.

Humble Oil & Refining Co.'s No. 13 Humphreys, Smith survey, sand at 2,971-75 feet, 400 bbls.

Texas & Brazos Valley Railroad Co.'s No. 1 Right of Way, sand at 2,928-68 feet, 8,000 bbls., now choked down to 175 bbls. an hour.

Sims Oil Co.'s No. 1 Rose, Harris survey, sand at 2,908-70 feet, 400 bbls. an hour, choked down to 175 bbls. an hour.

Humble Oil & Refining Co.'s No. 6 Pugh, Smith survey, sand at 2,914-66 feet, 1,272 bbls.

Humble Oil & Refining Co.'s No. 15 Humphreys, Smith survey, sand at 2,904-57 feet, 2,000 bbls.

McIntyre and others' No. 1 Smith, Garlick survey, was a hole full of salt water from sand at 3,090-3,120 feet. It was abandoned. This well was drilled about a half mile east of the line of production.

The Gulf Production Co.'s No. 7 Crews, Harris survey, got sand at 2,939-80 feet, and made 320 bbls. on the first hour's gauge.

The new well of the Skelly Oil Co. on the Keith farm, Mathews survey, mentioned in the general review of the field elsewhere in this edition as a 7,000-bbl. well, was last reported making 300 bbls. an hour choked in. The company has seven other wells drilling on the lease. No. 1 is incorrectly located in the first completion report on it. It is one location northwest of the Sims Oil Co.'s No. 1 Boyd.

The Roxana Petroleum Corp. has abandoned the locations for Nos. 9-A and 10-A McKie, Buffington survey. Derricks have been up on these locations for several weeks, but the locations, because of the small showing in No. 9-A, were considered not worth drilling.

LOUISIANA

SHREVEPORT, La., Nov. 13.—Conservative authorities do not decidedly discount the possibilities contained in reports from Webster Parish to the effect that the Oil Field Gas Co.'s No. 1 S. J. Merritt, Section 14-21-10, 35 miles northeast of Shreveport and 14 miles west of the Homer Field, brought in with 25,000,000 feet of gas, has established oil production in this area. The well is making a spray of oil not enough to entitle it to consideration as an oil producer, but certainly evidencing that oil is present in this area. Acreage is completely withdrawn from sale except at prohibitive prices, and there is enough in the situation to warrant close watching of further developments. Completion was accomplished at 2,535 feet.

CENTRAL WEST

TOLEDO, Ohio, Nov. 13.—In Dennison Township, Lawrence County, Kans., the International Oil & Gas Co.'s No. 12 on the Miller McCloskey farm, Section 25, 650 feet from the south line and 200 feet from the east line of the farm, produced 100 barrels.

RAILROAD RATE EXPERT DIES SUDDENLY ABROAD

CHICAGO, Nov. 13.—Clifford Thorne, formerly commerce counsel for the Western Petroleum Refiners' Association and the Western Oil Jobbers' Association, died suddenly this morning in London. With his wife and daughter he was on a trip around the world. As chairman of the Iowa State Railway Commission, he won the suit making the same rates apply to the upper Mississippi crossings as to the lower Mississippi crossings, which is said to have altered the map of Iowa. He won many important cases against the railroads and was regarded as one of the greatest geniuses in freight rate matters that this country has ever known.

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GROUP 3 REFINED MARKET UNSETTLED

(Continued from Page 111)

375 for export were reported during the week. The prices were no lower than those obtained for domestic shipment.

There was little demand for Naphtha or the 56-58, 450 grade of gasoline. Buyers were endeavoring to obtain both under 6 cents, with some success with naphtha. A substantial part of the naphtha output, however, is moving at 6 cents.

Kerosene and Distillates

Kerosene is still strong and buyers are practically a unit in declaring that there is practically none available out of this group over the balance of the month. The Imperial Oil Marketing Co. recently completed the purchase of 300 cars for delivery over the balance of the year. This and other purchases have helped clean up the available supply and the market outlook for the product is strong in the Mid-Continent area. Recent tank wagon advances in several marketing areas and the advance in export prices indicate the general strength of this product which should have a strong demand over the winter months.

Distillates used as fuel are weaker, although there has been no general change in price. Those who keep in close touch with market conditions affecting this product state that weather conditions account for the weakness. Jobbers are said to have bought heavily during October in anticipation of a seasonable demand in November.

The weather has been warm and jobbers have not depleted their stocks to the point where they are again in the market for additional supplies. Price concessions have been necessary where refiners had to move their output. But most sales managers are firm in their prices and expect to have no difficulty in moving their output and stocks when colder weather arrives.

Fuel and Gas Oils

Spot fuel oil prices are from 5 to 10 cents lower than a week ago. The 24-26 grade in sellers' cars is being bought as low as 70 cents. Railroads and other buyers with contracts based on the price of crude are generally taking their full quota and very little fuel oil is being offered for spot shipment. Competitive conditions have reduced the prices for the little that is being offered. Fuel oil can be bought for 60 cents in North Texas and this is equivalent to 67½ cents basis of Group 3. The market for this product has been weak when the entire United States is considered and, as in the case of gasoline, it is doubtful if a spot market higher than the marginal contract basis can be maintained over any length of time.

The gas oil price remains generally firm. There has been some heavy buying throughout the entire Mid-Continent area recently and prices have not been lowered in spite of the weak fuel oil situation.

Natural Gasolines

Natural gasolines continued their rapid decline in price started the last week in October. Present prices are from ½ to ¾ cent lower than those prevailing a week ago. The demand has fallen off and the manufacturers are giving whatever price concession may be necessary to move their output. Further reductions are considered probable.

Cosden & Co. on Tuesday reduced their prices on neutrals 2 cents on practically all grades. This company's prices are now the same as they were during the summer months. The company advanced its prices 2 cents about two months ago. The reduction is believed to reflect a seasonable slumping off in demand and a desire on the part of the company to give its customers the benefit of the recent reduction in crude prices. Some of the smaller plants had already reduced their prices and on some grades their prices are still under those of Cosden & Co. There is no general complaint regarding the demand for neutrals with the strongest demand for 200 viscosities. Cosden & Co. is quoting 2¾ cents on wax, with none available for immediate shipment.

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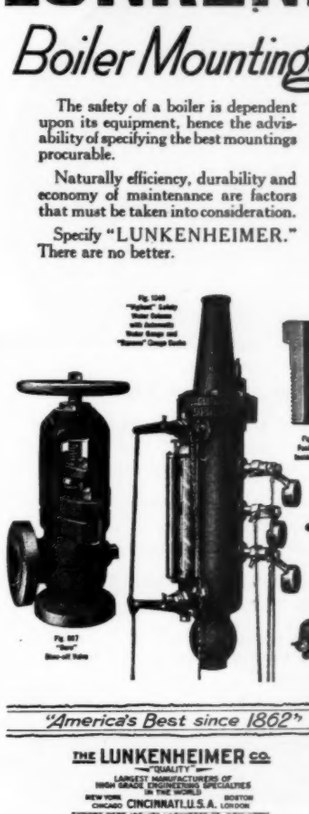

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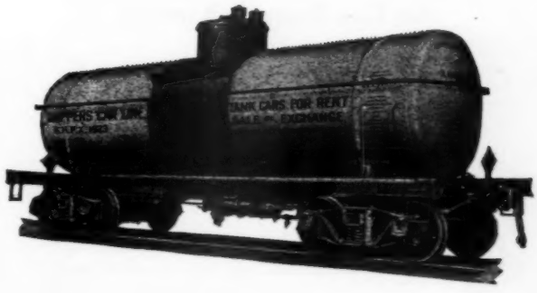

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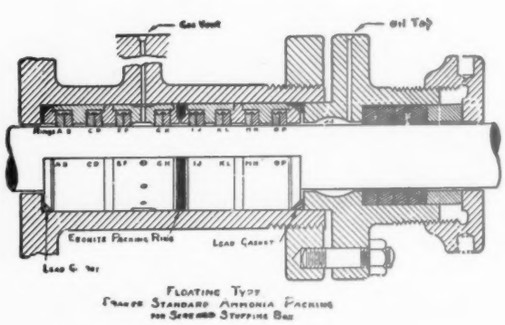

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Great Oil Fire Loss Is Shown by Survey Of Bureau of Mines

WASHINGTON, D. C., Nov. 12.—Oil producers in the United States suffer an annual fire loss that is staggering when totalled, as shown by an investigation completed by the Bureau of Mines, covering a 10-year period. In that time the more important fires have resulted in loss of 13,000,000 bbls. of oil and more than 5,000,000,000 feet of gas. From 1918 to 1920 fires in storage farms, pipe line systems and refineries caused an aggregate loss of about $14,000,000. One oil tank fire at Beaumont in July, 1922, resulted in damage of $2,000,000. Recently a fire at Humble, Tex., destroyed two large earthen storage tanks containing 800,000 bbls. of oil.

The majority of the fires, says the bureau, are caused by lightning, although many result from carelessness or lack of preventive measures. Gas or oil-heated forges for heating bits and the fires under boilers are a source of numerous oil and gas well fires. Faulty electrical connections and the breaking of electric bulbs at wells may cause fires, while sparks set off by stones or sand blown from gas wells, smoking, careless lighting of fires in the neighborhood of gas vapors, and brush and gas fires also are contributing.

A report issued by the bureau discusses the various methods of fighting lease, gas well, [illegible] tank and reservoir fires, which have proved highly successful. It is pointed out that some operators in congested fields where fire hazards are naturally greatest use steel derricks for drilling and pumping to protect against the burning rigs. Another protective measure employed at times in South Texas, California and Mexico is a mound of earth or masonry vault over the casing head of a large flowing well.

In the Texas Gulf Coast Field and in California, says the bureau, large storage reservoirs, either earthen or earthen with concrete linings, are covered with wood roofs and tar paper. The oils stored in these reservoirs are not usually of high gravities, yet they give off enough gas to make their storage dangerous, and this is taken care of through vents which permit the gas to escape. Nevertheless, oil fires in these reservoirs are unusual, although the Gulf Coast district is subject to frequent and violent electrical storms.

MUCH STEEL FOR OIL AS FOR AUTOMOBILES

The phenomenal output of automobiles thus far in 1923 has drawn heavily upon the steel industry. In the first nine months of this year, more than 3,000,000 passenger cars and trucks were produced, as compared with fewer than 2,600,000 in the whole of last year. Estimates of the amount of steel used in the construction of automobiles and trucks last year vary from 2,500,000 to 2,800,000 tons. If the same quantity per vehicle is being consumed this year, the 1923 consumption may be reckoned at 3,500,000 or 4,000,000 tons.

Oil companies consumed, it is estimated, nearly as much steel in 1922 as the automobile companies, the estimate for pipe consumption alone exceeding 1,000,000 tons. Further growth in the stocks of crude petroleum and gasoline has necessitated extensive additions to piping and storage facilities this year.

The principal consumption of finished steel by industries, expressed in percentage of total rolled steel production, was as follows: railroads, 22 per cent; buildings and other construction, 15 per cent; automotive, 10 per cent; and oil, water, gas and mining, 10 per cent. Exports accounted for 7 per cent of the total; the remainder, 36 per cent, representing consumption by a wide variety of industries.

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You are always protected when you use NO-CO-RO Balls and Seats because they are especially made to resist the worst acid water and sand conditions.

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MARKETS ARE STRONGER IN HOUSTON REPORTS

HOUSTON, Tex., Nov. 12.—There is much talk of higher prices for zero cold test oils in the Houston trade at present. Under the present condition of a keen demand, with some plants unable to fill orders, the higher price talk is the result of reflections that the situation points toward a rising market.

So far, prices are unchanged on the winter oils. But the demand is in excess of supply, so far as the several independent concerns along the Houston Ship Channel are factors in the trade. Some of these concerns are buying finished oils from the larger plants. In many instances, oils so bought are being turned at a profit.

This is the condition that indicates higher prices. The fact that oils bought at current prices can be turned by the buyers for profit in the open trade leaves no doubt that some plants are selling oils below what could be had in some quarters.

While it is the proper season for the oils refined from coastal crude, many sales managers are giving the shortage of Mid-Continent lubricants part of the responsibility for the strength of the coastal products. Many orders now being received here have in the past gone to the Mid-Continent concerns manufacturing lube oils. Some of these plants are shut down and out of the market. Others are selling from storage, while still others are not refining sufficient oils to take care of the demand.

Strength of the crude market is as evident as that in refined products. In fact some refiners expect the price of heavy coastal crude to advance before there is any marked change in finished oils. Production of the 22 degrees Baume crude in coastal fields continues to decline slowly. This fact, coupled with the demand for lubricants, causing full time throughput of plants, gives the crude oil market a touch of strength that is not to be overlooked in considering the immediate future of the whole situation along the Gulf Coast.

DUTCH-SHELL NOT INVITED

A report from Paris says a committee of British, French and Belgian companies having oil interests in Russia has been formed there. The Royal Dutch and Shell has not been invited to join this organization, which constitutes "the Inter-Allied Committee of Oil Companies in Russia."

The recent policy of the Royal Dutch and Shell in playing for its own hand in regard to Russian oil affairs has been regarded by other interests as not in accord with the principles agreed to by all the companies concerned, including the Royal Dutch and Shell. The new committee announces its decision "to resist any compulsory absorption of their properties by any organization whatever, and to oppose any monopoly or privileged positions in the exploitation of oil properties in Russia, or in the distribution of oil, either in the interior of that country or abroad."

ECONOMICALLY SOUND

The result producing benefits of The Oil and Gas Journal Classified Wants Section is helping the men of the industry to get the maximum good out of their equipment.

Good machinery, equipment., etc., is being kept in operation by reason of alert men buying and selling through the Classified Wants Section.

These men know that it is economically sound for a concern to sell good equipment which it cannot use. Therefore, thrifty executives use the Classified Wants Section as an economizing move that is helpful to the entire industry.

Read the good advertisements in the Classified Wants Section. It will help you.

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CLASSIFIED WANTS

COPY must be in our office Friday prior to date of issue. Average 6 words to the line. Cash in advance

LEASES—PRODUCTION

FOR SALE—At bargain prices, oil and gas leases, production and royalties in the Kentucky shallow fields. For full particulars and maps, address W. P. Harley, Bowling Green, Ky.

I HAVE wildcat acreage for sale in vicinity of well located by the same geologist who discovered the Sayre oil field and recommended by him to be as safe an investment as the Sayre Field. I can sell for $2 per acre and up. Dr. W. R. German, Canadian, Texas.

$1.00 PER ACRE for 1,000 or 5,000 acres in the Panhandle of Texas on surveyed structure. Well drilling to prove this territory. No rental due till 1926. A snap for someone. If interested, write and will forward printed geologist's report and map. 300 Alworth Bldg., Duluth, Minn.

FREE ON REQUEST—Map of Allen County, Kentucky, showing pools. Greatest shallow oil field in the world. Production on pipe line and leases with wells equipped and unequipped, near pipe line. Splendid opportunity for oil companies or syndicating. Brokers and promoters protected. Lock Box 4, Scottsville, Ky.

POTTAWATOMIE COUNTY leases and royalties. B. H. Rowlett, Tecumseh, Okla.

1,000 ACRES shallow wildcat offered for two contracts, or rig and lease for $600. M. M. Bryant, Trammel, Ky.

FIVE CENTS AN ACRE CASH—Texas school land for sale by State; $2 per acre, one-fourtieth cash, balance 40 years. Send 6c postage for further information. Investor Pub. Co., Dept. 8, San Antonio, Tex.

FOR SALE—Leases and close-up royalties in Cumberland County, Ky. Nothing but the very best. M. O. Allen, Burkesville, Ky.

OIL PROPERTIES WANTED

Have immediate purchaser for vast properties composed of complete and well diversified oil interests. Holdings should also contain defined reserves for development in addition to extensive production throughout the principal fields.

Have immediate purchaser for large property or group of properties. Holdings should contain acreage for drilling in addition to large production.

Also have purchasers for either large or small properties, should contain acreage for drilling in addition to production.

Negotiations confidential. Karl F. Divener, 950 W. North Ave., Pittsburgh, Pa.

WEWOKA LEASES and royalties for sale. Close to production and drilling wells. Orcutt-Harris & Co., Oklahoma City.

FOR SALE—5,000 acres 10-year leases in new Clay County, Tennessee, oil field within 3 miles of gusher. Price reasonable. Call or write R. H. Little, Box 88, Camden, Ark.

I AM STARTING well on a block of 2,180 acres, located on a good anticline in Oklahoma, that has had five producing wells already drilled on it. Am selling undivided interests in the whole acreage with one well completed. A 1/100 undivided interest, $200. Other interests same proportion. To interested parties will send complete geological report, with structural map, cross sections and full details on receipt of $2, which will be refunded to all purchasers. This is a strictly business deal, not a wildcat promotion; and you may put your money in the bank in escrow until well is completed. Address J. C. Stull, Hotel Brady, Tulsa, Okla.

FOR SALE in fee. 766 acres between West Columbia and Damon Mound, both faults connecting these fields cross this land; it is within 4 miles of production in either field. Good farming land. Owner non-resident. Price $50,000, half cash. Box 961, Houston, Tex.

LEASES—PRODUCTION

ARKANSAS LEASES and royalty to TEXAS OIL LEASES in eight active counties along the Balcones Fault, in any size tracts you wish. All my leases are purchased direct from the owners; perfect titles; write for price list. Frank Mashek, 2317 Crawford St., Houston, Texas.

Answer the 1924 Red Cross Roll Call.

LAND—8,000 acres Dimmit County, Texas; 3 miles from school, post office; good cotton land; no incumbrance, $12.50. 15,500 acres choice Nueces Valley, large river frontage; all subject to irrigation; surrounded by railroads, towns, and good farms, citrus fruit, alfalfa and pecan land, $16.50. Denton, Kampmann Bldg., San Antonio, Texas.

SPLENDID oil prospect of 185 acres, touching an undrilled dome on the same fault as Humble, which produced 90,000,000 barrels of oil. Rich river-bottom land. $60 per acre, fee. Hiland P. Lockwood. Rice Hotel, Houston, Texas.

FOR LEASE—40 acres Pushmataha County land, close to drilling. G. H. Williams, 1613½ North Mariposa, Los Angeles, Calif.

ATTENTION, GAS AND CARBON COMPANIES—Have a block of 20,000 acres with gas well on same. This well came in about eight years ago at 800 feet, making 3,000,000 feet, is now making about 1,000,000 feet. This property is in Logan County, Arkansas, just east of the Fort Smith gas field. This property will bear inspection and will make liberal deal with responsible company. Also a 15,000-acre block with good geology in Johnson County, Arkansas, near a 6,000,000-foot gas well; new 5 and 10 year leases; 50 cents rentals; $200 gas well royalty. Address D. W. Johnston, Cosmopolitan Hotel, Texarkana, Ark.

DRILLING BLOCKS—I have drilling blocks of from 2 to 8,000 acres with geology for test in the following Arkansas Counties: Nevada, Columbia, Miller, Lafayette, Hemstead, Johnson, Pape and Logan. Further information to those who mean business. D. W. Johnston, Cosmopolitan Hotel, Texarkana, Ark.

ROYALTIES—Have limited amount of one-sixteenth royalty near gas well, estimated 6,000,000 feet with good oil showing, excellent geology by prominent geologist. This royalty is in Johnson County, Arkansas, where other development is under way. Will sell with abstractions certificate in 40, 80 and 160-acre tracts at $2 per acre. Regular standard Arkansas, Oklahoma forms. Address D. W. Johnston, Cosmopolitan Hotel, Texarkana, Ark.

FOR OIL and gas leases on school land in the famous San Juan Basin, New Mexico, priced right, address P. O. Box 366, Farmington, N. M.

FOR SALE—320 acres, Section 33, north of range 1, I W. Township 33, Toole County, Montana, in oil district. C. Gooding, 14 S. 7th St., Kansas City, Kan.

Answer the 1924 Red Cross Roll Call.

FOR SALE—1,000 acres surrounded by three large gas wells that measure 1,600,000 feet each. This acreage is taken on very cheap rental. Sure shot for lots of gas. More acreage can be gotten. These large wells are within 50 yards of this boundary. Write R. T. Gaddie, Bengal, Taylor County, Kentucky.

OIL LEASES of any size from 20 acres and up in the vicinity of two wells that are being drilled near Chandler, Tex. Also leases in Smith County, Texas. Buy now while prices are reasonable on leases in East Texas and don't wait until they strike oil here and then have regrets. R. R. Yoe, P. O. Box No. 291, Tyler, Tex.

NEED TAX MONEY—New five-year leases, McClain County, Oklahoma, direct land owner, 50c bonus. Box 458, Purcell, Okla.

LEASES—PRODUCTION

TEXAS OIL LEASES 10c AN ACRE

Leases only 35 to 50 miles from the new Luling oil field can be bought now while they last for 10 cents to 35 cents an acre. We have ready for immediate delivery more than 20,000 acres and are offering them to the public in tracts of 10 acres or more for the remarkably low price of only 10 cents to 35 cents an acre.

One year ago the Luling Field was unheard of. Today it is producing an average of 52,000 bbls. of oil each day. This tremendous production means that there will be hundreds of tests drilled within a radius of 100 miles or so. Therefore the time to get leases in this surrounding territory is now before they become too valuable.

Every lease we offer for sale is owned by us and was purchased direct by us from the land owner. That accounts for our extremely low prices. If you want a good run for your money, here it is. Write for full particulars and maps. Gulf Realty Co., 1081 Bedell Bldg., San Antonio, Tex.

TO TRADE—Oil leases and royalties, near a drilling test in Russell County, Kansas, for similar leases or royalties near other drilling wildcat wells; test now drilling at 2,250 feet; contracted to 3,600 feet by Wilcox and others. Address Box 282, Salina, Kans.

FOR LEASE—200 acres in the Smackover Field, Township 17s-15w, Arkansas. This is the only tract in the vicinity not already leased. Well three-quarters mile distant yielding 30,000 bbls. per day. Mrs. M. J. Tucker, owner, Apart 301, The Sherman, Washington, D. C.

WILL GIVE 12,000 acres for a test well in promising Arkansas territory. Address G. Lucas, 617 Edwards St., Shreveport, La.

A FORTUNE IN WYOMING OIL

I now own and control 10,000 acres of oil lands in the State of Wyoming, situated in six different structures, including the famous Salt Creek and Teapot Domes, and will sell a one-half undivided interest to the right party. Do not inquire unless you have some cash and are ready to invest at big odds. K. S. Albert, U. S. Commissioner, 613 East Thirteenth, Casper, Wyo.

WEWOKA, OKLAHOMA'S newest oil field, leases and royalties in Seminole and Pottawatomie Counties. Royalty in 33-8-8. W. R. Turner, 2123 Warren Ave., Chicago, Ill.

FOR SALE—EQUIPMENT

FOR SALE—23 Star Drilling Machines in good condition and a complete set of tools; will sell very reasonable for cash. J. H. Brocksmith, 1856 Menard St., St. Louis, Mo.

FOR SALE—Used casing and line pipe in A-1 condition, all sizes. Write or wire for prices. Cisco Pipe & Supply Co., Cisco, Tex.

FOR SALE—Seven miles 5⅝-inch casing now in ground using as gas line. Gas going through the line now. Will sell in ground for 25 cents foot f.o.b. Cars 35 cents foot. If interested come and inspect right here. C. M. Sarber, Chanute, Kans.

WE HAVE for sale at $3.50 each, about 100 copies of Hilgard's Report on the Geology of Mississippi (1860). These reports are rare, but are indispensable to geologists who expect to work in Mississippi. Address E. N. Lowe, Director, Geological Survey, Jackson, Miss.

FOR SALE — A 28 Star, fully equipped, near Sedan, Kans. Will sell cheap to close a copartnership. W. G. Kountz, Webb City, Mo.

FOR SALE, delivered, at Mohrland, Utah, 600 feet of 12-inch and 600 feet of 10-inch casing; also 400 feet of 6⅝-inch at Myton, Utah. Address Box 700, care The Oil and Gas Journal, Tulsa, Okla.

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SOME of the best breed greyhounds, pups, matrons in whelp. B. Byers, Troy, Kans.

NEWFOUNDLAND puppies. Registerable. Write for prices. Joel Birkey, Fisher, Ill.

NEWFOUNDLAND — At stud, Togo, A., K. C. 373051; also thoroughbred Newfoundland puppies. Box 62, Fort Riley, Kans.

ONE 2-year-old pointer bitch, white and black, well trained, $75; one 5-months-old English setter dog pup, by Doc Murphy, field trial winner, $25. W. L. Surovik, Caldwell, Tex.

WANTED

WANTED—Three thousand feet three-inch tubing near Slick. Mr. Ellis, Roberts Bldg., Tulsa, Okla.

WANTED—Someone to help finance a well on proven acreage on structure, high grade oil. Will not consider any promoting. Box 751, Fort Worth, Tex.

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The Oil and Gas Journal contains statistics and unlimited information that is most valuable to the oil and gas man. Calls for back numbers are so numerous we are unable at all times to supply the demand—in fact, we can furnish very few back numbers. The issues missing from our files may be the ones you want. To make it possible for you, at all times, to refer to special articles or other information you desire, we have secured binders specially designed and durable and attractive in appearance that hold 26 numbers, or six months' issues. They are for sale at actual cost to us.

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WANTED

WOULD LIKE to hear from reliable broker who can sell 1,000 shares par value $10 in local oil company for development of Archer County lease; liberal commission. Address P. O. Box No. 82, Parkersburg, W. Va.

WANTED—Geologist; a practical oil man who has had a lifetime experience in the industry, wishes to get in communication with a good geologist who would consider taking an active interest in a new petroleum engineering firm. Need bright, active, practical, well educated man of high standing in his profession who has had several years Oklahoma and Mid-Continent work, and who would be in position to help finance and look for compensation out of earnings. The firm will be in close touch with substantial capital and have a broad field for more than ordinarily good profit. Exceptional opportunity for one who can qualify. All communications treated strictly confidential. Address 1950 Iuka Avenue, Columbus, Ohio.

BUSINESS OPPORTUNITY

CAPITAL SEEKERS confronted with difficult financial problems should communicate with Amster Leonard, First National Bank Bldg., Chicago.

JOHNSTON DRILLING CO., INC., El Dorado, Ark., experienced oil well contractors, can get proven acreage payable out of half first oil and contract to drill your well. Also have wildcat blocks.

CAPITAL IN ANY AMOUNT may be raised by reaching selected investors direct by mail. Twenty years' experience planning and writing sales campaigns for financing enterprises of almost every nature. Outline your proposition for free suggestions, samples of my work and new, enlarged, illustrated edition of my book, "How to Raise Capital." Gardner Advertising Service, 511-L Ridge, Arcade, Kansas City, Mo.

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To circularize the readers of The Oil and Gas Journal, once, it would cost more than $500. For a small sum you can reach these readers and place your proposition before them.

The classified rates are attractive. It costs but 25 cents the line for the first insertion and 15 cents the line for each additional insertion. Six words usually make a line. Cash with the order.

This useful table will help you to figure the cost of Classified Advertising in The Oil and Gas Journal. Keep it for reference:

	1 time	2 times	3 times	1 month
3 lines	$ .75	$1.20	$1.65	$2.10
4 lines	1.00	1.60	2.20	2.80
5 lines	1.25	2.00	2.75	3.50
6 lines	1.50	2.40	3.30	4.20
7 lines	1.75	2.80	3.85	4.90
8 lines	2.00	3.20	4.40	5 60
9 lines	2.25	3.60	4.95	6.30
10 lines	2.50	4.00	5.50	7.00

ATTENTION, OIL OPERATORS

Do you need some cash to tide you over these hard times? Send us a complete inventory of machinery, tools, casing, etc., you have, which you don't need, and see how quickly we can turn it into money.

THE OIL MEN'S CLEARING HOUSE
P. O. Box 1232, Dallas, Tex.

PAINT ATTRACTIVE signs and showcards rapidly with letter patterns. Samples for stamp. John Rahn, 2433 Greenview Ave., Chicago, Ill.

ORGANIZE YOUR BUSINESS under Declaration of Trust with all the advantages of a corporation; none of its disadvantages; good in any State; no State fee or State or Federal reports; no blue sky. Corporation Substitute Co., 572 Sheidley Bldg., Kansas City, Mo.

BUSINESS OPPORTUNITY

WILL FURNISH a 320-acre block in Pushmataha County for drilling contract. Wm. J. Riley, Atlantic City, N. J.

I HAVE 3,600-acre block leased for test well. Will assign full interest for contract to drill test well. H. C. Libkie, West Salem, Ill.

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Christmas is coming. You will want to give a present to your friend; a gift that will help him in his desire for advancement; a gift worthy of his intelligence.

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CHEMISTRY OF COMBUSTION OF OIL AND GAS

(Continued from Page 23)

the chemical requirements for complete combustion. This is 186 cubic feet of air per pound of fuel oil—assuming that all the oxygen of this 186 cubic feet could combine with the fuel. This is impossible in practice, hence, an excess of air is furnished, which will show no smoke coming from the stack, and cause the boss to compliment the fireman as an efficient fireman, when in reality he is likely using more fuel to get sufficient heat, to overcome the chilling effect of too much air. The boss pays the bill, and is satisfied to be fooled.

Boiler Plant Rule

A commonly used rule around boiler plants is "one pound of air for every 1,000 b. t. u. contained in the fuel oil." Thus, with a fuel oil showing 18,000 b. t. u per pound, 18 pounds of air would be required, or 223 cubic feet, which practically allows for the mechanical inability to burn fuel oil with its chemical requirements of oxygen. Stack or flue gas analyses always show CO (indicating incomplete combustion) and O (indicating an excess of oxygen) and large quantities of N (nitrogen). If, however, the flue gas analysis shows no CO at all, or too small a quantity of it, the free O will be greatly increased and so will be the N. This means that the unburned O and the N have absorbed large quantities of heat from which no benefit has been derived. On the other hand, if too much CO appears in a stack analysis the combustion is incomplete and the fuel loss may be as great as the heat loss when too little CO appears. One way the boss can see it in the smoke from the stack and the other way he cannot.

In order to follow the pyhsical conditions that govern the heat unit value of fuels, note that hydrogen contains 62,000 b. t. u. per pound, which is nearly three times that contained by an equal weight of any other gas. Hydrogen is so light that it requires 198 cubic feet to weigh a pound, hence, the number of b. t. u. per cubic foot is but 345. When hydrogen burns it unites with oxygen in the ratio of one part of oxygen with two of hydrogen forming steam. Hydrogen would be an ideal fuel for the gas engine because it is absolutely carbon free. The computed flame temperature of hydrogen gas burned with its chemical requirement of oxygen is 5,744° F.

ANALYSES AND RELATIVE HEAT VALUES OF VARIOUS INDUSTRIAL GASES

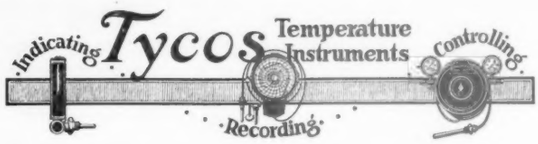
	Combustible Gases				Inert Gases			Illum. inants	Heat val. in BTU Cu. ft. of air per cu. ft.	per cu. ft. of gas
Name of gas—	Pct. H2	Pct. CO	Pct. CH4	Pct. C2H4	Pct. CO2	Pct. N2	Pct. O	Pct.		
*Natural gas	2.0	.5	93.0	.3	none	3.3	.35	none	9.00	980
*Coke oven gas	53.0	6.0	35.0	2.0	2.0	2.0	none	none	5.06	620
Producer gas (Bitum)	12.0	27.0	2.5	.4	2.5	56.2	.30	none	1.24	157
Producer gas (Anthr)	12.0	27.0	1.2	none	2.5	57.0	.30	none	1.06	137
*Coal gas	40.0	6.0	40.0	8.0	.5	5.0	.5	none	5.70	610
*Pintsch gas	18.5	6.0	52.5	none	.5	3.5	.5	18.5	8.87	1100
*Uncarb water gas	50.0	40.0	none	none	.5	3.5	none	none	2.30	300
*Carb water gas	22.0	29.0	30.0	16.0	1.0	4.0	.4	none	6.00	700
Dawson gas	18.0	26.0	3.0	none	7.0	47.0	none	none	1.32	119
Blast furn. gas	3.00	27.5	none	none	10.0	59.4	none	none	.81	100
*Calif. city gas from fuel oil	43.8	11.0	27.4	none	4.4	3.4	trace	CnH2n-6%	5.10	570
*Portland, Ore. city gas	38.1	6.5	26.9	.9	1.6	2.1	.2	CnH2n-4%	5.00	550
	The heat values				No heat values					

The flame heat or temperature of the inner cone of all gases marked with an asterisk (*) is above 4,000°F. when used with an oxygen blowpipe, while the inner cone with a Bunsen burner will reach 3,000°F. of any of the gases so marked. In many places flame temperature is more important than b. t. u. for the dollar. The flame temperature with hydrogen in the oxygen blowpipe will reach 5,744°, while acetylene computes as high as 6,000°. For special purposes these high temperatures are useful. For ordinary work they are higher than necessary. Flame heat of gasoline with oxygen blowpipe 5050° F.

Some of these gases show a "trace" of sulphur. The quantity is of no value.

IGNITED PIPE LINE

STRAWN, Palo Pinto Co., Tex., Nov. 10.—Ten men were burned about the face and hands when the Lone Star Gas Co.'s 18-inch pipe line on which they were making some repairs was ignited. The explosion occurred when a bystander is alleged to have lighted his pipe near the line where the men were at work.



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CHICAGO REFINED MARKET UNSETTLED

(Continued from Page 84)

rather seem to preface an advance in gasoline tank wagon prices.

Kerosene Not Changed

There was no decline in the tank wagon on kerosene, and as there have been advances in other districts than that of the Standard Oil Co. (Ind.) there is a feeling that this product is safe. Refiners are not reducing their prices, but it is believed they will try to advance them a little, as the supply is light. The domestic demand is very fair for the season, but the export movement has helped the market.

Fuel and Gas Oils

There were purchases made at 70 cents for fuel oil from Group 3 before the reduction in the tank wagon market, but after the crude cut. The market on this commodity is not affected by the tank wagon reduction except possibly sympathetically. The crude cut had a more direct influence. It is quite a common belief that the railroads which have been holding back on their purchases of fuel oil will now take in larger amounts, as their contracts are based on crude prices and they will take advantage of the reduction in the costs to them that follows a crude cut.

Under the same conditions, the gas oil prices declined one-eighth cent, but there is really little on which to base a market here now, as buyers and sellers alike are waiting to get a better line of what has been the effect on the refiner of the crude reduction.

Lubricating Oils

The demand for lubs is very good for the season, and while distributors note some falling off in the demand for motor oils and say that the call for industrial lubricants is fair to good, refiners are pretty well taken care of in the way of orders for the present and believe that by the time their present orders are completed they will have a new batch to work on. There is a disposition not to overproduce and repeat the error of two seasons back. The export movement is very fair and the foreign market is taking large quantities right along, although some of the exporters complain of increasing competition for export business.

RAILROAD USE OF FUEL OIL

The Bureau of Statistics of the Interstate Commerce Commission reports the following amounts of fuel oil were charged to freight and passenger train service of Class 1 steam roads in the United States during August, 1923, and during 8 months ended with August, 1923 and 1922 (figures in thousands of gallons):

	August	
Eastern District—	1923	1922
New England	10	.....
Great Lakes	968	1,008
Ohio-Ind.-Allegheny	256	174
Southern	2,365	2,208
Western—		
Northwestern	17,718	10,138
Central western	87,443	68,150
Southwestern	60,108	46,500
Total United States	168,868	127,178

CANADIAN WESTERN EARNINGS

Earnings of the Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary for August, 1923, were approximately $31,202, compared with $27,296 for the corresponding month of 1922. For the period from October 1 to August 31, aggregate earnings were $839,600 in 1923 as against $856,019 in 1922, a net decline of $16,419.

ELKHART, TEX., PUMP STATION

ELKHART, Tex., Nov. 10. — Lee Parks, Sherman Lively and Vergil Howell have contracted to sell to the Gulf Pipe Line Co. 46 acres situated about 500 yards west of the north of the I.-G. N. depot here. The pipe line firm intends to establish a pumping station. It is believed that drilling, abandoned last spring, will be resumed before long.

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Dutch-Shell to Buy Anglo-Persian Co., Says London Report

It is rumored in financial circles in London, but confirmation cannot be obtained from the principals, that the Shell, Royal and Dutch combines have secured control of the Anglo-Persian Oil Co., which has large holdings in the East and is a big factor in the Mosul Field.

Anglo-Persian until about a year ago practically was controlled by the British Government through its large holding of ordinary shares. This was undertaken to safeguard oil supplies during the war, but less than a year ago the Government quietly disposed of most of its shares and now is said to own about 20 per cent of the ordinary shares. It has a representative on the board of directors, but has no managerial control.

It has been the policy of the British Government to withdraw from all trading enterprises undertaken during the war, and there has been a special inducement in this case, due to some political troubles, with which the Government prefers not to be entangled.

So far as can be ascertained, says a London dispatch, all outstanding questions on the Mosul Field have now been settled between the Standard Oil, Anglo-Persian and French interests. The field is divided between these interests and there is absolute freedom for anyone to secure concessions in new areas from King Hasalin, in whose territory Mosul lies.

The Daily Express says Sir Henry Deterding, director general of the Royal Dutch Petroleum Co., is negotiating with the British Government for the purchase of the latter's holdings in the Anglo-Persian Oil Co. It is understood that if the deal is effected a cash payment of $60,000,000 will be involved.

TEXAS CO. MEETING

NEW YORK, Nov. 12.—Directors of The Texas Co. will meet on November 15 when, it is understood, the advisability of new financing will be discussed. Inquiry among bankers who for several years have figured in financial transactions with The Texas Co. brought forth a definite statement that the company had approached no bank to discuss the possibility of raising new money through the sale of bonds, and this fact was interpreted by bankers to mean that new financing, if any, would not be done in that way. It was pointed out that the company's policy in the past has been to raise new money through the sale of additional stock and there is no reason for bankers to believe that the company would deviate from that policy. The company, in addition to cash on hand, has a bank line that is good for $60,000,000, and its total bank indebtedness amounts to less than $25,000,000. It was regarded as probable that the company might find it sound policy to raise new money through the sale of additional $25 par stock to its stockholders on the basis of one new share for each seven now held, proceeds thus raised to pay off bank loans.

SHALE OIL FOR POWER PLANT

For the first time in the history of Nevada, a Nevada industry will obtain its motive power through the use of oil produced in the State, says the Elko Free Press. This development was made known by the Elko Lamoille Power Co.'s announcement that it had contracted with the Catlin Shale plant for a good portion of the output of the local oil producing plant, with which the power company intends to run its big Diesel engine during the winter months when snow makes it impossible to obtain power from the Lamoille plant. The oil has been tested by the oil company and has been found to be of a very high grade, and it is for that reason as well as to assist a Nevada industry that the power company contracted for the fuel oil.

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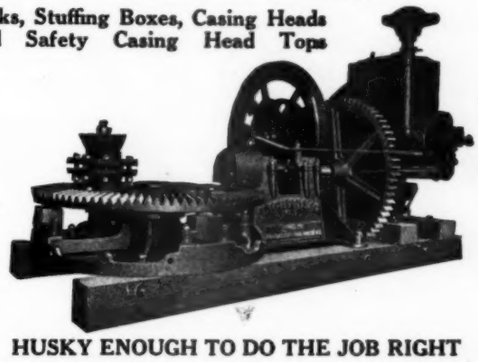

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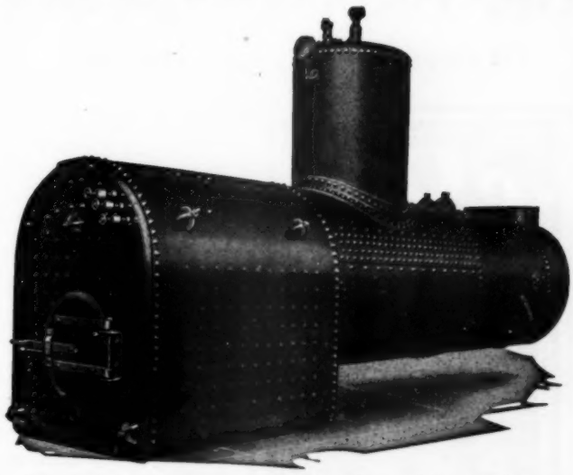

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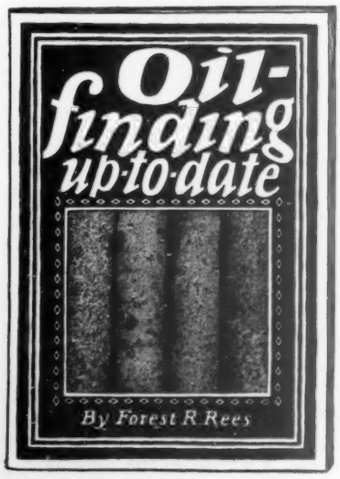

In this booklet, Mr. Rees, Oil Geologist at Tulsa, explains in simple language the origin of oil bearing formations and why surface appearances or well indications are sometimes deceptive.

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Hundreds of Wells Drilling in Italy In Search for Oil

Italy's annual requirements of oil and liquid hydrocarbons amount at present to 400,000 tons, of which 119,000 tons are consumed by the Government for army and navy purposes and for the State railroads. The Italian consumption is classified as follows.

Italy's Consumption of Petroleum Products

Products—	Total Consump. Tons	Gov. Consump. Tons
Benzine	110,000	10,000
Petroleum	100,000	4,000
Lubricants	60,000	25,000
Residual oils	130,000	80,000

It is interesting to note, reports Consul Leon Dominian at Rome, that the recent yearly Italian production does not quite attain 5,000 tons. It seems, therefore, that Italy will remain an importing country of liquid hydrocarbons for some years at least. Considerable attention, however, is being paid to the development of national oil resources.

Cost of Drilling

Research for oil is considered to be in a developed state in central Italy, particularly in Emilia and the Liri Valley. In southern Italy, however, especially in the Province of Basilicata, in the Avellino region, and in Sicily, no thorough prospecting appears to have been carried on. The most productive Italian region is Emilia, where hundreds of wells have been drilled. According to some operators, the oil produced so far has been obtained from zones of secondary importance, and the major district is considered by them to lie on the border belt dividing the uplands from the lowland between Piacenza and Rimini.

It has been estimated that the cost of drilling a well 800 meters deep (about 2,600 feet) amounts to 800,000 lire, or, say, 1,000 lire per meter. The time required to attain such a depth is stated to average 20 months. The machinery with pipes and accessories for such an operation costs 1,163,000 lire. Operating expenses, including labor, amount to about 15,300 lire per month. It is stated that in southern Italy the transportation of machinery is high, owing to the distance of oil zones from the main highways.

The oil obtained from the Province of Emilia is free from asphalt and rich in gasoline. Within this Province deposits of natural gas are found. as well as liquid hydrocarbons. The presence of natural gas has also been detected along a belt 200 kilometers (125 miles) in length in the folds of the Apennines.

Bituminous schists are found in Sicily. Calabria, Basilicata, as well as in Lombardy and Venetia. The best-known Italian deposits of asphaltic limestones are found in Sicily between Ragusa and Syracuse. About 200 hectares (480 acres) of bituminous strata are worked south of Ragusa. Here the product containing over 8 per cent of bitumen is used for paving asphalt; rocks of lower grade are being distilled for their oil contents. The distilled product yields an oil capable of furnishing 10,300 calories and having all the properties of a true mineral oil. The existence of the Ragusa deposits has led to the hope that lubricants will eventually be obtained from this source in sufficient quantity to put an end to their importation into Italy.

According to some Italian engineers, an important step in the development of the Italian oil industry consists in the building of refining plants for the handling of crude oil, which policy has already been initiated.

AUTOS $5,600,000,000 A YEAR

LANSING, Mich., Nov. 10.—The annual cost of owning and operating the 14,000,000 motor vehicles in the United States is approximately $5,600,000,000 and the investment in these vehicles probably is about $10,000,000,000, A. R. Hirst, Wisconsin State highway engineer, declared in an address before the Michigan Good Roads Association.

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TEXAS

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OIL AND GAS SITUATION OUTLINED BY HOOVER

(Continued from Page 70)

where it is no longer the gas man's fight. It is no longer a question of dealing through processes of rate adjustments through court procedure or otherwise for a few cents increase in gas rates that is immediately lost to the companies by rapidly advancing costs and difficulties in securing sufficient supplies of gas. If the communities in Ohio, and that means nearly the entire population of the State, are to continue for many years to enjoy the bst gas that has ever been given to mankind for the essential household purposes then natural gas rates must be put squarely on a manufactured gas rate basis, and that without delay. On the same price basis the people of Ohio could continue to have for many years a gas of twice the heat value of manufactured gas. On the other hand, if present rates are continued, it is a matter of only a short time—in some cases months rather than years—when many of the towns and cities will be unable to be supplied with natural gas because the supply will have vanished, and they will be faced with the problem of obtaining artificial gas or be without gas entirely.

Fields Being Exhausted

The Appalachian gas fields are being exhausted. For many years the people of Ohio, Pennsylvania, West Virginia and Kentucky have enjoyed the luxury of natural gas at prices far below that of competing fuel. Indiana formerly enjoyed it, but low rates, causing ruthless waste, depleted her supply. Ohio may well profit by the experience of her neighbor State. An additional grave situation presents itself from the fact that the United States Supreme Court has just granted a rehearing of the Steptoe law of West Virginia, a law which, if declared constitutional, would restrict or stop entirely the importation of gas from West Virginia to Ohio or other States. On the ultimate decision hinges whether there is to be a complete departure from time honored principles that have so far enduring and governed our domestic commerce. Virtually the entire population of the State of Ohio will be deeply affected by the final decision.

The Federal Government, through its proper department, eminent geologists making exhaustive studies of the fields of supply, and the gas companies themselves, have been warning the public of the depletion of the reserve of gas.

There seems to exist a false impression that the natural gas companies, operating on artificial gas prices, would be great financial gainers. As a matter of fact, it is doubtful if they would be as well off. Volume of sales would be deeply cut and that is the object of higher rates. The advantage would be that natural gas could be served for many years.

BUYS JAMESON REFINERY

VERNON, Calif., Nov. 10.—The Jameson refinery located in this city, has been acquired by the White Star Oil & Refining Co. The sale is part of a transaction involving producing and undeveloped properties in the Santa Fe Springs and Huntington Beach Fields, the marketing facilities of the Jameson interests and a one-half interest in the Southern California Pipe Line Co. This pipe line connects the Santa Fe Springs Field with the refineries located at Vernon. It is understood that the new owners expect to enlarge the capacity of the refinery.

PETROLEUM LOSSES BY FIRE

The yearly fire bill of petroleum producers in the United States runs into staggering figures, states the Department of the Interior, following an investigation by the Bureau of Mines. Statistics compiled by the bureau, covering a 10-year period, including only more extensive fires, indicate total losses of approximately 13,000,000 barrels of oil and 5,000,000,000 feet of gas.

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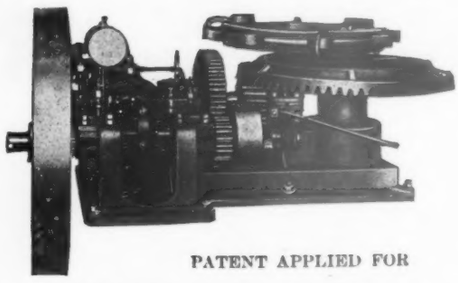

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Petroleum Division Commerce Department Serves Oil Industry

The exportation of petroleum products has been, in the opinion of many economists, one of the most important single factors in the growth and development of American foreign trade—if not indeed the largest factor, from a commercial point of view. Beginning many years ago, our exports of kerosene went to all parts of the world, until the American kerosene can became one of the best-known symbols of American trade abroad. In more recent years the shipment of other petroleum products has increased, until in 1922 our exports of all classes of these products were valued at $345,507,122, or 9.2 per cent of the total exports for that year. A comparison of these figures with the $149,792,687 worth of mineral oil exports in 1913, representing 6.2 per cent of all merchandise exports for that year, shows the steady and consistent growth of our foreign petroleum trade, as well as its present importance in relation to other lines.

In addition, the exportation of petroleum products is of considerable service to the domestic industry itself, though this fact is often not given the attention it deserves. Foreign markets not only serve as outlets for the profitable distribution of surplus products when there is a domestic overproduction, as during the spring and summer of 1923, but also provide for the regular distribution of kerosene, lubricating oils, fuel oil, etc., which, in the endeavor to supply the demand for gasoline, are produced in much great quantities than can be consumed on the domestic market.

The petroleum division of the Bureau of Foreign and Domestic Commerce, of which Henry C. Morris is chief, has been organized to aid the American petroleum industry in the development and maintenance of foreign markets. It is prepared to furnish information and service on foreign marketing conditions, the activities of foreign competitors, significant changes in the trend of petroleum trade abroad, foreign legislation affecting petroleum development and trade, etc. In the preparation and distribution of such data, the division has the assistance of the foreign representatives of the Departments of Commerce and State, and works in cooperation with the United States Geological Survey, the Bureau of Mines, the Department of State and other Government departments, as well as with the other divisions of the Bureau of Foreign and Domestic Commerce.

The commercial intelligence division of the bureau, in cooperation with the various commodity divisions, maintains trade lists showing foreign importers of and dealers in all the principal commodities exported from the United States. Regarding many of the firms listed there are confidential reports which are of value to American firms contemplating sales of merchandise or the securing of agencies abroad. In addition to foreign dealers in petroleum products, lists of producers of crude petroleum are also compiled by the commercial intelligence division, working with the petroleum division.

Activities of Foreign Refineries

While the majority of the world's refinery capacity is in the United States, there are a considerable number of large refineries and many smaller ones in other countries, and these exert an important influence on the trade.

One of the largest and most important of the refineries abroad is the recently established plant of the Anglo-Persian Oil Co., operated by the National Oil Refineries (Ltd.), a subsidiary company, at Llandarcy, near Swansea, Wales. This will ultimately have a capacity of some 30,000 bbls. of crude oil per day, and is already having a marked effect upon the marketing of petroleum products in the United Kingdom — now the largest foreign market for American oil—as well as upon the whole European trade. This refinery and the large plant of the Anglo-

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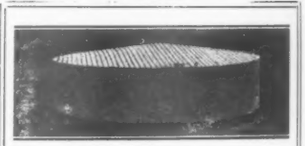

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Persian Oil Co. at Abadan, at the head of the Persian Gulf, operate on crude oil obtained from the company's wells in Persia.

The Anglo-Persian, through the Commonwealth Oil Refineries (Ltd.), is also constructing a large refinery at Melbourne, Australia, which will doubtless be a large factor in the petroleum trade of that country.

Other refineries of importance are situated in Mexico, Japan, Rumania, British India and the Dutch East Indies, and there is a considerable refining capacity in Poland, Czechoslovakia, Peru, Canada and other countries which have an appreciable production of crude oil or which are advantageously situated with regard to production or to markets for refined products. An interesting development in this phase of the industry is the recent announcement that the Argentine Government plans to erect a refinery in that country capable of handling 2,000 metric tons (about 14,000 barrels) of crude oil per day, with an ultimate capacity of double this amount, together with another smaller plant.

The activities of these refineries are of interest to the American industry, both in connection with the sale of refined oils abroad and, in certain cases, as possible markets for American crude, and the petroleum division is making a compilation of the various plants located abroad, with such data as are available and are considered valuable to the American industry.

No survey of foreign markets for petroleum products can be complete without a consideration of the present and possible future sources of supply within the market itself. Such countries as Rumania and Peru, for example, are able to supply, from the domestic production, practically all of the local demand for petroleum products, with the exception, perhaps, of certain specialized lubricating oils, etc., and still have a surplus for export.

In such countries as Colombia and Venezuela, where not only is the local market largely supplied from domestic output, but indications appear favorable for a sufficient production of crude in the near future to supply other markets as well, the developments should be closely watched by the American exporter. The petroleum division endeavors to make such information available in suitable form. In this connection, a file of petroleum laws of foreign countries has been established, and for many countries, particularly those of South America, a complete file of current legislation governing concessions and development work in those regions can now be consulted in the division.

Information regarding foreign concession activities is reported currently to the division. Much of the material on this subject is confidential or semiconfidential. Most of it, however, can be consulted by representatives of American oil companies that are interested in the territory covered, and it often proves of considerable value in connection with foreign development work.

American exporters of petroleum products often require information on the tariff schedules, commercial laws, transportation facilities and general economic data of foreign countries. For the purpose of preparing and disseminating material of the nature indicated, the bureau maintains a division of foreign tariffs, a division of commercial laws and a transportation division. General economic information on various foreign countries is prepared by the regional divisions (western European, eastern European, Latin American and far eastern).

OIL PARTY OFF TO INDIA

NEW YORK, Nov. 10.—Among the passengers on the White Star liner Celtic was a group of young Americans, headed by C. S. Barry, on their way to the Standard Oil plant at Calcutta, India, after spending four months in the office of the company at 26 Broadway. They will travel to Indian via London and the Suez Canal, Red Sea and Indian Ocean.

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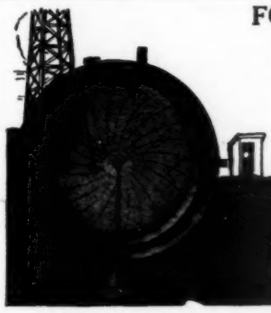

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BOILER FEED WATER TROUBLES AND CAUSES

(Continued from Page 80)

lation (asbestos) is composed principally of magnesia (made from magnesium corbonate), the effct of scale on boiler tubes can be readily appreciated. Rankine states that if the resistance to the passage of heat through wrought iron be 1.0, then the resistance of calcium carbonate is 17.0 and of calcium sulphate is 48.0.

Water Absorbs Impurities.

Whether or not the prevention of scale is warranted in all cases is hard to say. When the scale-forming constituents of the water are low in quantity or when the boiler is operated at low rates, then each case must be decided upon its merits; in any case, the cost of the treatment can be balanced against the loss due to taking the boiler out of service, the expense of cleaning, and the decrease in efficiency and capacity because of incrustation. The proposition of removing scale with acid, as compared with the prevention of scale by water softening, can merely be mentioned here; the acid treatment is reasonably satisfactory when properly handled.

In flowing over the soil, or in passing through the soil, water naturally absorbs some of the minerals it touches or through which it percolates. Water is quite apt also to come into contact with decaying animal or vegetable matter from which it may absorb acids and carbon dioxide. The latter may also be taken into solution directly from the air. In either case a compound ion results which greatly facilitates the absorption of mineral constituents. The presence of carbon dioxide in the water results in the formation of carbonic acid gas (H_2CO_3) which is weak, unstable, and slightly dissociated into hydrogen ions and a compound ion (HCO_3) containing one atom of hydrogen, an atom of carbon, and three atoms of oxygen. It is this bicarbonate ion which in reality causes the absorption of certain mineral constituents by the water; since its presence is due to carbon dioxide, the latter only will be mentioned hereinafter. Other acids in water will cause transformations yielding other soluble minerals which are relatively unimportant from the standpoint of scale formation. As a general rule the less contact water has with earthy material, or the more insoluble the minerals over or through which it passes, the smaller will be the amount of scale-forming materials taken into solution.

Scale-forming Ingredients

The most characteristic rocks or minerals which are decomposed by water are feldspar, limestone, mica, magnesite and dolomite, and gypsum. The resulting impurities in the water are silicia, and the salts of iron, aluminum, calcium, magnesium, sodium, and potassium. Due to the fact that limestone and gypsum are relatively abundant, and relatively soluble, it so happens that these minerals, theoretically at least, furnish the major portion of the scale-forming ingredients of boiler feed water. The chief constituents of limestone are calcium carbonate and magnesium carbonate. Magnesite and dolomite are also rich in magnesium carbonate. Magnesium and calcium corbonates are sparingly solubie as such, but because of the carbon dioxide in the water, they are transformed into the corresponding bicarbonates, which are readily soluble at ordinary temperatures. These bicarbonates of calcium and magnesium are unstable at higher temperatures, the carbon dioxide being driven by heating; they decompose into carbonates which are insoluble (practically speaking) at a temperature of 212°F. Therefore that hardness or scale-forming procivity due to calcium and magnesium bicarbonates is termed "temporary hardness." The resulting scale is soft and friable, or may even be merely a sludge, which can be blown out. The thought should be kept in mind that the term "temporary hardness" is an empirical definition, denoting the presence merely of calcium and magnesium bicarbonates.

Calcium sulphate, commonly known as gypsum, is soluble in water as is magnesium sulphate. Calcium sulphate forms a hard and dense scale, while the scale from magnesium sulphate alone is soft. However if calcium carbonate is also present, it combines with the magnesium sulphate to form particularly hard and dense scale. Both calcium and magnesium sulphate are soluble at the temperature of boiling water, and therefore cannot be precipitated merely by boiling; for this reason waters that contain these two salts are said to have "permanent hardness." Calcium sulphate begins to precipitate at temperatures above 300°F.; the temperature in a boiler opereaing at 150 pounds pressure is about 366° F.

Cause of "Hard" Water

Using the commonly accepted terms and taking account only of the common and most widely distributed constituents, scale-forming ingredients in boiler feed water are denoted by the term "temporary hardness" when they consist of calcium bicarbonate and magnesium bicarbonate; when calcium sulphates and magnesium sulphates are present, the water is said to possess "permanent hardness." Broadly speaking, then, hardness in water is due to the salts of calcium and magnesium; this hardness can be easily reduced to a satisfactory figure either by causing the precipitation of the salts before the water enters the boiler, or by causing their chemical transformations into salts that do not cause scale.

In addition to the magnesium and calcium salts, iron salts are more rarely found in boiler waters, occurring both as bicarbonates and as sulphates. Since the treatment is the same as for the other bicarbonates and sulphates and since they are rare as compared with the calcium and magnesium salts, the latter only will be mentioned hereinafter. Some chemists recognize a third class of waters, corroding in character, containing such substances as chlorides and nitrates of magnesium or calcium and sulphate of iron; as compared with the common "hardness" constituents, such waters are rare. Of course other minerals than those mentioned thus far occur quite frequently in boiler waters; sodium chloride for example, is a very common ingredient.

In the chemical treatment of water additional constituents may be added so that the total amount of solids in the water may become quite high. Generally speaking, the remedy is blowing down According to the accepted definition, sodium chloride does not contribute to the hardness content of water, it does not form scale except in high concentrations and in that condition it may also promote corrosion. This holds true for most of the chlorides commonly found in feed water, and especially is it true of magnesium chloride.

Water Softening

The treatment of boiler feed water for the removal of hardness is quite simple in its general aspects, although there are a number of fine points requiring careful study and close supervision. In the present instance merely the essential elements are discussed.

By empirical definition, hardness denotes scale-forming constituents; temporary hardness means those which can be precipitated by boiling at atmospheric pressure, and permanent hardness includes those ingredients which are not so precipitated. Taking the more concise empirical definition, the term temporary hardness denotes the presence of calcium and magnesium sulphates. Let

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the fact be remembered that the corresponding iron salts may appear in both divisions, but that in both cases the treatment renders them harmless; also in permanent hardness there may be present calcium and magnesium chlorides and nitrates, as well as the above mentioned sulphates, the prescribed treatment taking care of them also.

Temporary hardness calls for a lime treatment. Temporary hardness may also be removed by boiling, and in many cases boiling alone might be sufficient; on the other hand, prolonged boiling is often necessary, and the heat treatment then becomes prohibitive in cost. A number of chemicals may be used to neutralize the bicarbonates; of these lime is the cheapest. Ordinary slaked or hydrated lime, calcium hydroxide, is used practically without exception in commercial practice for the removal of calcium and magnesium bicarbonates. This includes even the zeolite *softeners*, which are admittedly satisfactory, if the price can be met, in the removal of permanent hardness. Zeolite softeners are natural or artificial minerals containing sodium, and having the property of easily exchanging the sodium for calcium and magnesium. Some authorities consider them inefficient in the removal of temporary hardness. In certain catalog literature one zeolite manufacturer recommends that a lime treatment be used as auxiliary to the zeolite filter when the temporary hardness content of the water is high.

Removing Permanent Hardness

As will be shown further on, soda ash is used to remove permanent hardness; under certain conditions soda ash might also tend to eliminate or lessen temporary hardness. Caustic soda would undoubtedly function better in this connection than would soda ash, although the complete action desirable would depend to a certain extent on the proportions of the various scale-forming salts in the water. The degree of ionization of the various substances present would also be likely to influence the results. Many small-plant operators without technical education know that soda ash is used in water treatment, and on the basis of such knowledge they dump into any water what they consider a sufficient dose of soda ash. In one such instance approximately 200 pounds of soda ash were used per 1,000 (42 gallon) barrels of raw water. A proximate analysis of the raw water showd 276 PPM (parts per million) of temporary hardness and 127 PPM of permanent hardness. According to theory the permanent hardness would call for 47 pounds soda ash per 1,000 barrels of water. A proximate analysis of the treated water (after the application of the 200 pounds of soda ash) showed that the permanent hardness had been reduced to zero, the temporary hardness had been reduced from 276 PPM to 240PPM and that the treated water contained approximately 137 pounds free soda ash (per 1,000 barrels). The required 47 pounds of soda ash had functioned properly in reducing the permanent hardness to zero and the balance of approximately 180 pounds of soda ash still remained in the water, seeking new worlds to conquer. This water was used for engine cooling only. Even granting the wild assumption that soda ash would entirely remove temporary hardness, the relative costs of hydrated lime at 2 cents per pound and soda ash at 7 cents per pound should settle the question.

The term "proximate analysis" refers to the determination of temporary hardness by titration with sulphuric acid, phenolphthalein and methylorange, and the determination of total hardness by means of a soap solution, or the determination of permanent hardness by a soda reagent and acid titration.

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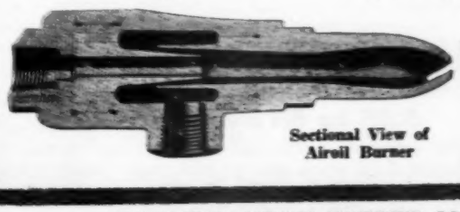
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thing is the removal of the "free" or "excess" carbon dioxide and of the "bicarbonate" carbon dioxide. The elimination of temporary hardness may be considered simply as the removal of carbon dioxide. This substance is present in the water in two forms, as a free gas, and in a "half-bound" condition, or as part of the bicarbonate calcium and magnesium. The presence of carbon dioxide assures the maintenance of the calcium and magnesium in the bicarbonate form, and before they can be reduced the excess carbon dioxide must be disposed of. Therefore a quantity of lime is added sufficient to effect this result. Calcium hydroxide (hydrated lime) reacts with carbon dioxide to form insoluble calcium corbonate. Having the excess carbon dioxide out of the way, lime will then combine with calcium bicarbonate to form insoluble calcium carbonate. The magnesium bicarbonate is then transformed by lime into insoluble magnesium hydroxid. Knowing the amount of free carbon dioxide and the bicarbonates present in the water the required amount of lime is calculated from the chemical equations representing the above described reactions. If the precipitates thus formed are permitted to settle out of the water before it is used and are then removed entirely from the system, the results are good. Calcium carbonate and magnesium hydroxide have been called insoluble, whereas the fact is that these substances are sparingly soluble at atmospheric temperatures, probably to the extent of about 30 PPM. This amount of hardness is entirely permissible in all ordinary cases.

The fact should be understood that merely causing the precipitation of the carbonates is not alone sufficient. Suppose that the total quantity of make-up water in a plant be small, so that periodical treatment is acceptable; the precipitates are permitted to settle in the cooling tank or pond. As time goes on the treated water tends to pick up carbon dioxide, which will cause the corbonates to be taken back into solution, and then dropped out as scale when the water goes into the boiler or passes through the engine jacket. Therefore if it is at all possible the precipitate should be removed entirely from the system.

Use of Soda Ash

As stated above, the permanent hardness content of boiler feed water is reduced by the use of soda ash. In case only calcium sulphate is present with no free carbon dioxide in the water soda ash alone will do the work, since it converts the calcium sulphate to insoluble calcium carbonate. The sodium in the soda ash at the same time is converted into highly soluble sodium sulphate, which does not form scale, and for ordinary purposes may be considered as harmless except when highly concentrated. Since in this treatment the concentration of sodium sulphate must inevitable increase, it becomes necessary to blow down periodically. In case carbon dioxide is present in the water, the tendency would be for it to convert the calcium carbonate thus obtained into the soluble calcium bicarbonate. Therefore it is necessary to add lime sufficient to prohibit this transformation.

In case magnesium sulphate is also present in the raw water, it again becomes necessary to add lime in addition to the soda ash. Magnesium sulphate and sodium carbonate (soda ash) react to form the highly soluble sodium sulphate above mentioned, and magnesium carbonate. In the presence of carbon dioxide this magnesium carbonate becomes soluble because of its conversion into the bicarbonate; in fact, the solubility of magnesium carbonate, as such, increases merely because of the presence of other salts in the solution. Hence it is necessary to add sufficient lime to change the magnesium carbonate into insoluble magnesium hydroxide. As a general rule, never add soda ash without lime.

Methods to Be Used

While temporary hardness alone may often be found in boiler feed waters, it

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is probably a fact that permanent hardness is never found alone, but is invariably accompanied by temporary hardness. In the proper method of analysis the magnesium is determined as such, and sufficient lime is added to remove it whether in the bicarbonate or sulphate form; the analysis of course shows the quantity of soda ash needed to reduce the magnesium to the bicarbonate (carbonate) form. Due to this and other circumstances it is hardly proper to assume that proximate methods of analysis are sufficient; they should always be checked, in so far as possible, by complete industrial analysis made by competent chemists. This statement is in no way to be construed as an argument against the proximate analysis, which is of real value when properly executed and intelligently interpreted.

The precise methods to be used in administering a prescribed treatment depend upon conditions. Assume a small plant wherein a 500 or 1,000-bbl. tank is available for treating purposes. If the amount of lime needed is low, say 20 to 30 pounds, dump it into a barrel of water, stir thoroughly, and transfer the milky mixture to the tank, a bucket full at a time. Repeat if more lime is needed. Use any means at hand for agitating the water in the tank. A small circulating pump can be used, taking the water off at any convenient point and putting it back at the top, the stream of water being directed in such fashion that a rotary current is produced in the tank. Circulate thus two or three hours or until the lime has all been dissolved, then let stand 24 hours or so, then pump off the clear treated water and flush out the sediment. If no means are available for stirring the water in the tank, simply let stand for 48 or 60 hours. Assuredly the best results will not be obtained by simply dumping the dry lime into the top of the tank.

The soda ash may be added in the same way, except that it would be well to add the soda ash as a solution, rather than as a mechanical mixture. That is, permit all of the soda ash to be dissolved in water in the barrel before transferring to the tank. If the total amount of soda ash is 50 pounds or less, this can be accomplished in one barrel of water, if more than 50 pounds make up the solution at the rate of about 50 pounds to the barrel.

Principles of Water Softening

For larger plants more elaborate equipment is necessary, and well worth while. Devices are available which automatically add the prescribed amount of chemical in proportion to the amount of raw water passing into the plant.

In regard to water softening in general the following broad principles may be stated:

(1) The precise quantity of "hardness" salts should be known, together with a fair idea as to the chemical nature of such salts.

(2) The precise quantity of softening reagents needed must be added to the raw water. The fact should be recognized that too much of the softening agent might be just as detrimental as the scaling material which the reagent is supposed to remove. The treatment should be "controlled" by suitable methods such as the "proximate analysis."

(3) The reagent should be added to the water in such fashion as to obtain the mamximum benefit therefrom. Fundamentally, this merely requires proper weighing and mixing apparatus, and intelligent handling.

(4) Provision should be made for the thorough precipitation of the rejected ingredients formed by the action of the softening agent. The precipitate should be removed entirely from the system. The concentration of soluble materials left in the water should be kept at a reasonable figure by systematic blowing down.

It might very easily prove true that no treatment at all is better than the wrong treatment, or than the proper treatment poorly executed.

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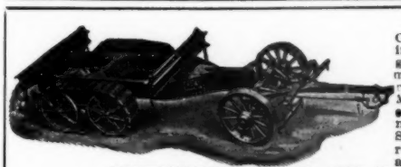

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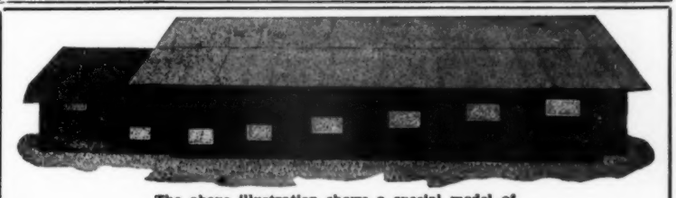

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Report of Operations in Eastern Fields for October, 1923

EASTERN FIELDS

Summary of Completed Work

	Comp.	Prod.	Dry	Gas
Allegany	27	70	1	1
Bradford	78	205	0	0
Middle Field	9	43	1	0
Venango-Clarion	29	76	3	4
Butler-Armstrong	9	16	2	0
South Pennsylvania	23	50	7	13
West Virginia	100	362	17	51
Southeast Ohio	76	568	10	12
Total October	351	1,390	41	81
Total September	338	1,336	44	61
Difference	13	54	3	20

Rigs and Wells Drilling

	Rigs	Drg.	Ttl.
Allegany	14	12	26
Bradford	17	60	77
Middle Field	2	18	20
Venango-Clarion	2	29	31
Butler-Armstrong	4	22	26
Southwest Pennsylvania	19	45	64
West Virginia	82	129	211
Southeast Ohio	39	69	108
Total October	179	384	563
Total September	162	380	542
Difference	17	4	21

WELLS COMPLETED

ALLEGANY FIELD

Jordan, Surprise Oil 1
Fee, J. Dummy & Son 2
Childs, Neal H. Wilson 2
Fee, Sawnett Oil Corp. 1
Fee, Sawyer & Watson ..... wtr
Childs, Empire & Childs 2
Fee, Forest Oil 5
Fee, L. W. Shaner and others 4
Fee, C. J. Fowers and others 3
Fee, Forest Oil 5
Birtell, McMurdy and others 2
Fee, R. E. Lester and others 2
Fee, R. J. Dermitt 5
Fee, E. G. Williams and others 5
Fee, A. J. McDivitt 2
Coast and others, M. J. Cromley and others 2
Pierce, F. J. Brown and others 10
Fee, Hannifan and others 5
Fee, Empire 2
Fee, Empire & Breckenridge 1
White & Bartlett, Phillips & Howard 2
Fee, Hill & Co. 2
Noble, Empire 1
McKee, Empire 2
Altoona, Ebenezer Oil 2
Barnes, Empire ..... gas
Ainsworth, Cryder Creek Oil ..... dry

Wells completed 27
Production 70
Dry 1
Gas 1
Water 1

BRADFORD FIELD

Porter, Forest Oil 4
Porter, Forest Oil 4
Baldwin, Forest Oil 4
Chambers, J. A. Bucher 3
Skinner, W. E. Burdick 1
Borden, W. E. Miller 4
Borden, South Penn Oil 2
White, South Penn Oil 10
Pittenger, South Penn Oil 1
Burns, Margaret H. Curtis 1
Moore, C. H. Williams 2
Chambers, Schorman & Williams 3
Keating, Potter & Nichols 2
Duke, Staley & Thomas 3
Robinson, T. H. Kervin, Jr. 1
Fee, F. M. Boocks 2
D. C. & B., Cora M. Simon 3
Whipple, South Penn Oil 2
Fee, J. H. Gibson 1
Lafferty, McGregor & Grant 2
Fee, Webb Estate 2
Zeigler, Evans & Wood 1
Garlock, Denwood Oil 2
Fee, Hazelwood Oil 2
Bingham, Hazelwood Oil 2
Bingham, H. B. Oil 2
Bingham, Murphy et al 2
Bingham, State Oil 2
Buchanan, South Penn Oil 1
McIvin, South Penn Oil 2
Lafferty, George & George 1
Lafferty, George & George 2
Lafferty, George & Grant 1
Hood, Meade & Hood 3 1
Vosburg, Berry Bros 3 1
Vosburg, Berry Bros. 4 1
Weston, Jr., Tr., South Penn Oil 28 2
Weston, Jr., Tr., South Penn Oil 68 1
Rounds & Lawrence, South Penn Oil 1
Fee, Quinlan Bros. 1
Drake, Hamlin et al 2
Fee, Kepner et al 1
Bartlett Est., J. V. Golden 11 2
Hamlin Est., South Penn Oil 88 4
Fee, Wilson & Fitzgibbon 8
Fee, Hazelwood Oil 38 3
Griffith et al, J. E. Golden 5
Leasure, South Penn Oil 2
Leasure, South Penn Oil 1
Fee, Ellen Barry 1
Fee, South Penn Oil 25 1
Bing, 453, South Penn Oil 85 4
Fee, Mrs. S. F. and George Kaber 34 1
Bing, F. M. Johnston 2
Bing, A. L. Stover 2
Fee, South Penn Oil 2
Fee, Bryner & Benson ..... water
Kennedy & Clark, Phoenix Oil 29 6
Fee, Wm. C. Kennedy Co. 92 2
Bing, 136, Wm. C. Kennedy Nos. 4, 10 10
Bing, 389, D. W. Daily 4
Bing, 427, Scofield & White 2
Bing, 409, South Penn Oil 5
Bing, 370, E. L. Wann et al 5
Bing, 368, Grant & Mohan 5
Bing, 491, Forest Oil 32 15
Bing, 538, C. P. Byrom Est. 22 1
Bing, 439, South Penn Oil 63 5
Bing, 411, Hazelwood & S. P. Oil 73 1
Bing, 533, South Penn Oil 58 8
Curtis & Imus, South Penn Oil 27 1
Hamlin, South Penn Oil 89 2
Burdick, South Penn Oil 28 2
Pittinger, South Penn Oil 7 1
Buchanan, South Penn Oil 19 1
Bing, 400A, South Penn Oil 03 1
Moody, 66, South Penn Oil 35 2
Cotton, South Penn Oil 38 2
Bing, 450 and 474, South Penn Oil 85 2

Production 205
Wells completed 78
Water 1

MIDDLE FIELD

Duke, M. L. Boyle 8 6
Mantz, L. F. Kinley et al 32 4
Lawton, Gallup et al 22 ..... water
Burgess, D. W. Wright et al 19 1
Lot 387, Penna Oil 15 1
Lot 422, Sloan & Zook 12 ..... abd
Rogers, F. H. Trax 1
Hoffman, Titusville Trust 23 1
Merkle, Brockelhurst & Kapp 41 ..... dry
Jennings, C. E. Marnahan 28 25

Wells completed 9
Production 43
Dry 1
Water 1
Abandoned 1

VENANGO-CLARION

Parsons, S. R. & T. W. Parsons 12 1
Myers, Craig, Hoffman et al 13 1
Whittaken, Delbert & Whittaken ..... dry
Duffield, Mong & Co. ..... dry
Davis, Sam Ginter ..... dry
Critchlow, S. Y. Ramage 33 1
Eakin, G. A. Eakin 26 1
Brumminger, A. W. Bronson 66 1
Clark, Robt. & Geo. Foggan 19 40
Oil City Land, Welch-Oil City Trust 73 1
Oil City Land, Welch-Oil City Trust 74 1
McCray, Espy Oil 8 1
S. & C. Lake Ice, S. & C. Lake Ice 7 1
McCandless, A. T. Straub 50 1
Smithman, J. B. Smithman 171 1
Cross, H. J. Hoffman 4 1
Kitelinger, O. C. Nat. Bank 49, 51 15
Ware, W. M. Ware 5 1
Lemley, C. S. & W. E. Arthurs 24 1
Graham, Emma L. Hulin 21 1
Welton, Hovis & Co. 1 1
Obenrader, Alum Rock Gas 3 ..... gas
Mull, Mull 3 1
Clarion—
Hartle, Frank Hartle et al 3 1
Swartzfager, Swartzfager & Hall 9 ..... gas
Etzel, Shorts Oil & Gas 1 ..... gas
Barnett, Alum Rock Gas 2 ..... gas
Neely, Slicker, Berlin et al 2 1

Wells completed 29
Production 76
Dry 3
Gas 4

BUTLER-ARMSTRONG

Campbell, H. H. Campbell 1 5
Campbell, Lease No. 3, Rankin, Campbell et al 6 2
Campbell Heirs, McCarrier, Rush et al 3 5
Breadin, Weber et al 1 1
Breadin, Weber et al 3 1
Hilliard, Butler County Nat. Bank 8 1
Leicy, M. B. Finnessy 2 1
Wilson, Garvin & Reynolds 1 ..... dry
Pflug, M. Garvin et al 1 ..... dry

Wells completed 9
Production 16
Dry 2

ALLEGANY FIELD

Rigs

Childs, Neal K. Wilson.
Fee, Duesenbury, Dickerson & Goodrich.
Fee, Hatch & Hill.
Fee, G. N. Hill et al.
Fee, Forest Oil (two rigs).
Fee, C. J. Forness et al.
Fee, Allegany-Bradford Oil Corp.
Pierce, F. J. Brown et al.
Fee, A. J. McDivitt.
Fee, Homestead Oil.
Coast et al, M. J. Cromley et al.
McKee, Empire, Ltd.
Nobles, Empire, Ltd.

Wells Drilling

Burdick, W. B. Turner and Cuba Nat. Bank.
Fee, Jacob Trenkle Est.
Fee, Sawyer & Watson.
Childs, Empire & Childs.
Wells et al, Producers Gas.
Smith & Gray, J. B. Gray.
Fee, B. & C. Oil.
Fee, Allegany-Bradford Oil Corp.
Fee, Birtell & Birtell.
Norton, Knights Creek Oil.
Halden, Richardson & Co.
Fulmer, H. K. Fulmer et al.
Bean, F. & A. Austin.
Rigs, 14; wells drilling, 12; total, 26.

BRADFORD FIELD

Rigs

Pittenger, South Penn Oil.
White, South Penn Oil.
Fee, C. H. Corwin.
Weston, Jr., Tr., South Penn Oil 29.
Bing, Tidewater Pipe Co., Ltd. 5.
Franchot, S. A. Channon.
Fee, Howard Wile.
Fee, Grant & Mohan 53.
Fee, South Penn Oil 26.
Fee, South Penn Oil.
Fee, Wm. C. Kennedy Co. 94.
Bing. 136, Wm. C. Kennedy Co. Nos. 4, 42.
Bing. 370, Hazelwood Oil.
Bing. 490, T. H. Kennedy No. 2, 95.
Bing. 463, Hazelwood Oil 33.
Bing. 568, Associated Producers 254.
Bing.-Satt., 570, South Penn Oil 85.

Wells Drilling

Duke, Gridiron Oil.
Porter, Forest Oil.
Skinner, W. E. Burdick.
Borden, W. E. Miller.
Baldwin, F. E. Baldwin.
White, South Penn Oil.
Middaugh, South Penn Oil.
D. C. & B., C. A. Duke.
Williams, Fuller & Wilson.
Chambers, Schorman & Williams.
Duke, Staley & Thomas.
Fee, F. M. Boocks.
D. C. & B., Cora M. Simon.
Whipple, South Penn Oil.
Fee, J. H. Gibson.
Lafferty, McGregor & Grant.
Gibson, Hazelwood Oil.
Jack, J. & H. M. Jack.
Fee, I. Willett heirs.
Corwin, J. E. Gallagher.
Weed, Berry et al.
Weston, Jr., Tr., South Penn Oil 69.
Fee, Quinlan Bros.
Drake, H. Hamlin et al.
Drake, H. Hamlin et al.
Burns, Krapf & McCandless 21.
Burns, Fitzgibbon et al 10.
Fee, J. V. Golden 22.
Franchot, F. M. Johnston & Son.
Fee, P. H. Givens 18.
Franchot, W. C. Kennedy & Co.
Fee, W. M. Whitehead.
Fee, E. B. Sage 22.
Griffith et al., J. V. Golden.
Fee, South Penn Oil.
Bing. 453, South Penn Oil 86.
Fee, Hillard & Dodge.
Fee, Wm. C. Kennedy Co. 93.
Bing. 136, Wm. C. Kennedy Co. No. 4, 39.
Bing. 136, Wm. C. Kennedy Co. No. 4, 41.
Fee, South Penn Oil 41.
Paul Est., South Penn Oil 5.
Bing. 136, Simpson Bros. 17.
Bing. 567, South Penn Oil 82.
Bing. 402, South Penn Oil.
Bing. 209, South Penn Oil.
Bing. 463, Hazelwood Oil 32.
Bing. 499, South Penn Oil 32.
Bing. 570, South Penn Oil 83.
Bing. 591, Associated Producers 253.
Havin, South Penn Oil 21.
Jones, South Penn Oil 187.
Jones, South Penn Oil 189.
Middaugh, South Penn Oil 33.
Whipple, South Penn Oil 101.
Melvin, South Penn Oil 154.
Bing. 450 and 474, South Penn Oil 86.
Bing.-Satt., South Penn Oil 83.
Smith, South Penn Oil 104.
Bing. 409, South Penn Oil 13.
Rigs, 17; wells drilling, 60; total, 77.

MIDDLE FIELD

Rigs

Hamlin, S. H. Elder.
Lawton, Gallup et al 23.

Wells Drilling

Duke, M. L. Boyle 9.
Bingham, South Penn Oil 25.
Wright, G. McCool et al.
Burgess, M. D. Wright et al 20.
Lawton, Cohen & South Penn 45.
Bingham, Andrus & McDowell.
Bingham, J. L. Yerdon 34.
Bingham, H. P. McKalip et al 37.
Water Co., Eberhart & Johnson.
Lot 38, H. A. Siggins.
Lot 40, Kinzau Chemical.
Lacy, L. E. Chapman.
Hoffman, Titusville Trust 24.
Glenn, Holmes et al 1.
Tidioute & Warren, C. E. & L. M. Carnahan 48.
DeVore, Campbell Hill Oil 1.
Jennings, C. E. Carnanan 29.
Hannah, E. O. Pequignot 4.
Rigs, 2; wells drilling, 18; total, 20.

VENANGO-CLARION

Rigs

Tract 74, S. Y. Ramage 62.
Clarion—
McElhatten, Whitehill & McElhatten 4.

Wells Drilling

Baird, Crawford, Gregory & Co. 29.
Critchlow, S. Y. Ramage 34.
Eakin, G. A. Eakin 27.
McElree, T. J. McElree 48.
Dempsey, Yanke, Suhr et al 8.
Fulmer, Oil City National Bank 7.
Hasson, Ed. Seiderman 48.
McCandless, A. T. Straub 51.
Smithman, J. B. Smithman 172.
Cross, H. J. Hoffman 5.
Porter Heirs, J. B. Porter 44.
Brown, C. H. Brown 9.
Rice, Rice & Thompson.
Ware, W. M. Ware.
Cowan, Plum Oil & Gas.
Moorehead, Utzinger, Mong et al 5.
Clapp, United Natural Gas 2.
Kenemuth, Frank Kenemuth et al 8.
Kapp & Graham, Alum Rock Gas 6.
Neuland Heirs, A. J. & J. B. Vogelbacher 1.
Whitling, Alum Rock Gas 10.
Swartzfager, Swartzfager & Hall 10.
Best, Weaver Gas 1.
Garis Heirs, Mong, Garis et al 4.
Garis, Alum Rock Gas 4.
Kline, Gibson, Kline et al 3.
Best, Berlin, Younkers et al 1.
McCall, Parker Drilling et al 1.
Heeter, Heeter Heirs 1.
Rigs, 2; wells drilling, 29; total, 31.

BUTLER-ARMSTRONG

Rigs

Boggs Heirs, R. C. & W. V. Binkerd.
Jackson, Leslie & Co. 3.
Montgomery, E. W. Pitts 3.
Forcht, Forcht, Smith et al 1.

Wells Drilling

Smith, Jane Oil.
Christy, Grieff, Elbeck et al 1.
Cumberland, Cumberland, Campbell & Sherwin 2.
Ray, Proper, Graham et al 2.
Shira, T. P. Bell 2.
Beikler Steen & Co. 1.
Little, Little & Co. 1.
Ramsey, Wm. Pfeifer & Co. 1.
Stepp, Floyd Albert et al 1.
McNaughton, E. J. Porter et al 1.
McEvoy, Shaner, Swartzlander et al 4.
Sasse Heirs, Denny & Co. 2.
Fennell, Lang & Co. 1.
Sheridan Heirs, Nobel & Co. 1.
Sasse Heirs, Denny & Co. 2.
Graham, Clully & Donaldson 1.
Link, Brad. Penn Oil 1.
Ripper, Truman, Johnston et al 6.
Frishkorn, Oscar Shoup & Co. 1.
Goehring, J. A. Elliott & Co. 1.
Hutchison, L. D. & T. R. Campbell 7.
Campbell, W. J. Martin et al 1.
Rigs, 4; wells drilling, 22; total, 26.

SOUTHWEST PENNSYLVANIA

WASHINGTON COUNTY

WELLS COMPLETED

Morrison, Hughes & Day 1 ..... gas
Gabby heirs, Clarke Bartlett 1 ..... dry
Auld, Mfrs. L. & H. Co. 2 40

Wells completed 3
Production 40
Dry 1
Gas 1

ALLEGHENY COUNTY

Craig, J. Craig 2 ..... dry
McComb, Amer. N. G. Co. 1 ..... gas
Murphy, Murphy & Co. 2 ..... gas
Long heirs, Amer. N. G. Co. 3 6
Weir, Geo. Weir 1 ..... dry
Vandervoit, Amer. N. G. Co. 2 ..... gas
Pfaff, E. A. Bream Est. 3 ..... gas
Myers Bros.' lot, Jones Oil Corp. 1 ..... dry
Dixon lot, J. D. White Oil Co. 1 ..... dry
Tipker, Englefield & Co. 1 5

Wells completed 10
Production 10
Dry 4
Gas 4

GREENE COUNTY

Lants, Carnegie Gas Co. 2 ..... gas
Jennings, Carnegie Gas Co. 1 ..... dry
Lemley, Keystone O. & G. Co. 2 ..... gas
Caldwell, Caldwell-Grim O. & G. Co. 1 ..... gas
Taylor, Fox Hill O. & G. Co. 1 ..... gas
Hoskinson, Phila. Oil Co. 2 ..... gas
Bradley, Phipps Drilling Co. 2 ..... gas
Wright, Mfrs. L. & H. Co. 5 ..... dry
Baldwin, Nineveh-Concord O. & G. Co. 2 ..... gas
Smith, C. T. Sutton & Co. 1 ..... gas

Wells completed 10
Production 6
Dry 3
Gas 1

WASHINGTON COUNTY

Rigs

Berry, J. S. Watson & Co. 2.
H. Paul Et., Wm. McSmith 2.
Parkinson, Mfrs. L. & H. Co. 2.
Grimes, N. G. Co. of W. Va. 1.

Wells Drilling

Scott heirs, Magnetic O. & G. Co. 1.
Day, Mfrs. L. & H. Co. 1, 2.
Mounts, Emerald Pet. Co. 2.
Parkinson, Carnegie Gas Co. 2.
Wilson, New O. & G. Co. 10.
Rigs, 4; wells drilling, 6; total, 10.

ALLEGHENY COUNTY

Rigs

Mallissee, Peoples Gas Co. 4.
Lyons, M. M. Walley & Co. 8.
Rampt, Clark & Co. 1.
McKinney, M. S. Williams 2.
Shenot, Leidecker & Co. 4.

Wells Drilling

Pahlman heirs, Amer. N. G. Co. 2.
Morrison, Peoples Gas Co. 2.
McMath, Morse O. & G. Co. 3.
Swartz, Miller & Co. 1.
Sarvers, Smith & Dougherty 1.
Blind Floral Co., Blind Floral Co. 1.
Micheal, Local Parties 1.
Downey heirs, Harbison & Co. 1.
Davis heirs, Davis O. & G. Co. 1.
Rigs, 5; wells drilling, 9; total 14.

BEAVER COUNTY

Wells Drilling

McDevitt, Jas. R. Edwards 5.

GREENE COUNTY

Rigs

Webster, N. G. Co. of W. Va. 1.
Riggs, Ayers O. & G. Co. 2.
Grim, Carnegie Gas Co. 3.
Bennett, Bennett O. & G. Co. 2.
Pierson, Pierson O. & G. Co. 3.
Closser heirs, Mfrs. L. & H. Co. 2.
Brown, Brown O. & G. Co. 4.
Thomas, Greensboro Gas Co. 1.
Campbell, Carnegie Gas Co. 1.
Webster, N. G. Co. of W. Va. 1.

Wells Drilling

South, Fred Garrison 1.
Tanner, Greensboro Gas Co. 2, 3.
Garard, J. L. Garard 40.
Powell, Phila. Oil Co. 2.
Whitehill Peerless O. & G. Co. 2.
Yeager, H. D. Freeland & Co. 1.
Wise, M. & H. O. & G. Co. 1.
Caseman, Keystone O. & G. Co. 1.
Lemley, Little Four O. & G. Co. 1.
Lemley, Tague & Co. 1.
Waters, Boundy Bros. & Co. 1.
Wright, Wright-Grim O. & G. Co. 1.
Riggs, Ayers O. & G. Co. 1.
Johnson, Carnegie Gas Co. 1.
Anderson, Carnegie Gas Co. 2.
Keffer, Boundy Bros. & Co. 1.
Murray, Carnegie Gas Co. 2.
Garey, Carnegie Gas Co. 2.
Whipkey, Big Five O. & G. Co. 1.
Bissett, Snyder & Bissett 1.
Williard, Carnegie Gas Co. 1.
McNay, Mfrs. L. & H. Co. 1.
Brown, Waynesburg Home Gas Co. 1.
McGreevy, Waynesburg Prod. Co. 1.
Drier, Morton O. & G. Co. 1.
Clutter, Greensboro O. & G. Co. 1.

Clemons, Greensboro O. & G. Co. 1.
Huffman, Greensboro O. & G. Co. 1.
Rigs, 10; wells drilling, 29; total, 39.

WEST VIRGINIA

LEWIS COUNTY

John, Hope Gas Co. 1 ..... gas
Hopkins, Rinehart & Turner 1 10
Fahey, Carnegie Gas Co. 1 ..... dry
Hays, O. F. O. Co. 3 ..... dry

Wells completed 4
Production 10
Dry 3
Gas 1

HARRISON COUNTY

Allen, Clarksburg L. & H. Co. 1 8
Bramer, Johnston & Co. 1 10
Sommerville, Reserve Gas Co. 1 2
Connelly, Clarksburg L. & H. Co. 2 ..... gas
Harrison, Northwestern O. & G. Co. 1. gas
Layman, Weekly & King 1 ..... gas

Wells completed 6
Production 20
Dry 0
Gas 3

MONONGALIA COUNTY

Tennant, Carnegie Gas Co. 1 ..... gas
Moore, Randall Gas Co. 1 ..... gas
Price heirs, J. H. McDermott O. Co. 8. 2

Wells completed 3
Production 0
Dry 0
Gas 2

WETZEL AND TYLER COUNTIES

Ernest Mfrs. L. & H. Co. 1 2
Littel, Mfrs. L. & H. Co. 2 ..... gas
McGuffey, Carnegie Gas Co. 2 ..... dry
McGuffey, McGuffey O. & G. Co. 1 40
McIntyre, Alvy O. & G. Co. 2 ..... gas
Blake, Carnegie Gas Co. 1 ..... dry
Snodgrass, Carnegie Gas Co. 1 ..... dry

Wells completed 7
Production 42
Dry 3
Gas 2

MARSHALL COUNTY

Blake, Blake O. & G. Co. 1 ..... gas
Thos. Blake, Lynn Camp O. & G. Co. 1 gas
Thos. Markey, Decem Development Co. 2 20

Wells completed 3
Production 20
Dry 0
Gas 2

BROOK COUNTY

McKim Sisters, McKim Oil Co. 14..... 2

DODDRIDGE COUNTY

Fleming, Piggott & Shinn 1 ..... gas
Maxwell, Columbian Carbon Co. 49 ..... gas
Abels, Trainer & Travis 2 25
Kelley heirs, Raccoon O. & G. Co. 3.. dry
Kelley, So. P. O. Co. 1 ..... gas
Smith, Creed Oil Co. 1 ..... dry
Beaver, Hope Gas Co. 1 ..... dry

Wells completed 7
Production 25
Dry 3
Gas 3

RITCHIE COUNTY

Tharp, Carnegie Gas Co. 5 ..... gas
Britton, Phila. Oil Co. 2 ..... gas
Brown So. P. O. Co. 1 ..... gas
Miller, So. P. O. Co. 1 ..... gas
Leggett, Elder & Straley 1 ..... gas
Collins, Cheveraux de Frizie 1 ..... gas
Mason, Star O. & G. Co. 1 ..... gas
W. Va. Tract, W. J. Jonas 13 1
Wilson, Phila. Oil Co. 1 2
McTighe heirs, L. Robinson 1 ..... dry
Smith, Grove & Parrish 7 10
Burke, So. P. O. Co. 1 1
Jackson, Penn Royal O. Co. 2 ..... gas
Null, Mellon Bros. 3 ..... gas
Maxwell, O. C. Satterfield & Co. 1 .... gas

Wells completed 15
Production 14
Dry 1
Gas 10

GILMER COUNTY

Miller heirs, Phila. Oil Co. 1 ..... gas
Harden, Hope C. & R. Co. 1 ..... gas
Gum, Hope C. & R. Co. 3 ..... gas
Gainer, Hope C. & R. Co. 2 25
Woofter, Phila. Oil Co. 1 ..... gas
Linger, Phila. Oil Co. 1 ..... gas
Hardman, Hope C. & F. Co. 1 ..... gas
Wright, C. W. McCall & Co. 1 ..... gas
Rogers, Burnsville O. & G. Co. 1 ..... dry
Crites heirs, Phila. Oil Co. 4 ..... gas
Barr, G. L. Cabot 2 ..... gas
Hardman Bros., Carter Oil Co. 7 ..... gas
Reaser, Phila. Oil Co. 1 ..... gas

Wells completed 13
Production 25
Dry 1
Gas 11

WIRT COUNTY

Hale, E. H. Lockhart & Co. 7 ..... dry

CALHOUN COUNTY

Pell & Newman, Federal O. & G. Co. 16 gas
Ferrell, Haught & Co. 1 ..... dry
Gherke, So. P. O. Co. 1 8
Jarvis, Norris & Cain O. Co. 1 ..... dry
Burnett, Hope Gas Co. 1 ..... gas

Wells completed 5
Production 8
Dry 2
Gas 2

WOOD COUNTY

King, So. P. O. Co. 8 5
Allman, Continental O. & G. Co. 1..... 2

PLEASANTS COUNTY

Thistle heirs, Samuels & Gale 7 1
Dunbar, E. S. Briggs 6 ..... dry
Martin, Creek Oil Co. 1 ..... dry
White, F. D. Meister 15 1
Storres, Lynch & Co. 2 1
Bumgardner, A. O. D. Co. 4 4
Watson, WalnutRun O. Co. 8 10
Ryan, Wm. McCullough 1 ..... gas
Farley, Carter Oil Co. 2 ..... gas
Darnell, Stephens Oil Co. 1 ..... dry

Wells completed 10
Production 17
Dry 3
Gas 2

ROANE COUNTY

Seaman, Seaman Oil Co. 7 2
Kelley, Brown Far. O. Co. 4 ..... dry
Carruthers, Rex Pyramid O. Co. 1 ..... dry

Wells completed 3
Production 2
Dry 2

LINCOLN COUNTY

Pauley, A. C. Lawrence 7 3

CLAY COUNTY

Evans, Smathers & Co. 1 ..... gas

PUTNAM COUNTY

Dalton, St. Albans O. & G. Co. 1..... gas
Alford, Laurel O. & G. Co. 1 ..... gas
Mitchell, Solver Gas & Oil Co. 1..... gas

Wells completed 3
Gas 3

KANAWHA COUNTY

Gatchell, Empire Pet. Co. 4 2
G. K. P. C. & L. Co., Owens Bottle & M. Co. 14 ..... gas
G. K. P. C. & L. Co., Owens Bottle & M. Co. 16 ..... gas

Wells completed 3
Production 2
Gas 2

BOONE COUNTY

C. R. M. Co., Owens B. & M. Co. 19... gas
C. R. M. Co., Owens B. & M. Co. 20.... gas
Bedford, Owens B. & M. Co. 2 ..... gas
Williams Coal Co., Pure Oil Co. 220.... 140
L. R. & P. Tract B, Pure Oil Co. 9.... 10

Wells completed 5
Production 150
Dry 0
Gas 3

CABELL COUNTY

Morrison Commercial Gas Co. 1..... gas
McCallister, Commercial Gas Co. 1 .... gas
M. McCallister, Commercial Gas Co. 1. gas
Swann, Midway City G. Co. 1 ..... gas
Blackwood, Harshbarger O. & G. Co. 1 gas
Connor, J. H. Harshbarger & Co. 3..... 1

Wells completed 6
Production 1
Dry 0
Gas 5

LEWIS COUNTY

Rigs

McDonald, H. H. Duncan & Co. 1.
Keyser, Carnegie Gas Co. 1.
Smith, Carnegie Gas Co. 1.

Wells Drilling

Smith, J. C. Chidister 1.
Gaston, A. P. Bailey & Co. 1.
Rohrbaugh, Shea O. & G. Co. 2.
Starcher, Jones Oil Co. 1.
Bailey, Steinbeck & Krause 1.
Rigs, 3; welladrilling, 5; total, 8.

MARION COUNTY

Rigs

Renner, Wm. Haught & Co. 1.
Orndoff, S. N. Elliott 1.

Wells Drilling

Murray, Carnegie Gas Co. 1.
Holbert, C. A. Snodgrass 1.
Freeland, Owens B. & M. Co. 1.
Rigs, 2; wells drilling, 3; total, 5.

HARRISON COUNTY

Rigs

Talkington, Lohn & Burnett 1.
Michael, Phila. Oil Co. 1.
Davis heirs, G. L. Cabot 2.
Goodwin, So. P. O. Co. 10.
Hannah, Hampton O. & G. Co. 1.
Lowe heirs, Horner Bros. 1.
Grove, Marsh Bros. 1.

Wells Drilling

Duncan, Lohn & Burnett 1.
Cork, Clarksburg L. & H. Co. 3.
Jones, Bridgeport L. C. Co. 1.
Duffey, Aizpurin O. & G. Co. 1.
Davis heirs, Grasselli Chem. Co. 5.
Swiger, Phila. Gas Co. 1.
Rigs, 7; wells drilling, 6; total, 13.

MONONGALIA COUNTY

Wells Drilling

Wear, So. P. O. Co. 9. 9
Jackson, Mfrs. L. & H. Co. 1.
Wright, Randall Gas Co. 1.
Wells drilling, 3.

WETZEL AND TYLER COUNTIES

Rigs

Antill, Johns Gas Co. 5.
Sellers, Phila. Oil Co. 1.
Sprague, Annex Oil Co. 1.
McIntyre, Wiser Oil Co. 2.
Hardman, Trainer & Ash 3.
Thompson, Amer. O. & D. Co. 1.
Lyons, Carnegie Gas Co. 2.
McGinnis, H. L. Lambert 3.

Wells Drilling

Conway, Carnegie Gas Co. 4.
Keller, Mfrs. L. & H. Co. 2.
Sidwell, Mfrs. L. & H. Co. 2.
Murphy, Carnegie Gas Co. 1.
Wade, Carnegie Gas Co. 3.
Abbrigg, Carnegie Gas Co. 4.
Sellers, Phila. Oil Co. 1.
Marshall, Hope C. & R. Co. 2.
Ferrell, Phila. Oil Co. 2.
McIntyre, Carnegie Gas Co. 2.
Lyons heirs, Wiser Oil Co. 3.
Miller, Victor O. & G. Co. 1.
Koch, Silver Hill Oil Co. 1.
Henderson, Davis & Co. 1.
Anderson, Cox, Gorrell & Co. 1.
Furbee, Carnegie Gas Co. 1.
Stephens, So. P. O. Co. 15.
Parrish, Phila. Oil Co. 1.
Smith, Roberts & Saba 1.
Spencer, Eagan & Baker 1.
McGinnis, E. L. Lambert 6.
Rigs, 8; wells drilling, 20; total, 28.

MARSHALL COUNTY

Rigs

Logsdon, Marshall-Preston O. & G. Co. 1.
McClusky, Mfrs. L. & H. Co. 2.
Chambers, Mfrs. L. & H. Co. 1.

Wells Drilling

Davis, G. B. Patterson 2.
Yoho, Hope Gas Co. 1.
Mason heirs, St. Joseph O. & G. Co. 1.
Hughes, N. G. Co. of W. Va. 1.
Crow, Appalachian O. & G. Co. 2.
Lowe, Hope C. & R. Co. 1.
Rigs, 3; wells drilling, 6; total, 9.

DODDRIDGE COUNTY

Rigs

Coleman, Carter Oil Co. 2.
Adams, Engle Run O. & G. Co. 1.
Roberts, Keystone Oil Co. 4.
Mason, I. O. G. P. Co. 2.
Hudson heirs, Continental O. & G. Co. 3.

Wells Drilling

Smith, Eastern Pet. Co. 2.
Coleman, Eastern Oil Co. 4.
Smith, Carter Oil Co. 5.
Maxwell, Carter Oil Co. 30.
Maxwell, Carnegie Gas Co. 28.
Ross, Trainer & Travis 1.
Allen, Trainer & Summers 1.
Douglass, Hope C. & R. Co. 3.
Ford, Mfrs. L. & H. Co. 1.
Mason, I. O. & G. P. Co. 2.
Darnell, I. O. & G. P. Co. 1.
Rigs, 3; wells drilling, 11; total, 14.

RITCHIE COUNTY

Rigs

Huff, Hope Gas Co. 1.
Spencer, Star O. & G. Co. 5.
Adams, Carter Oil Co. 1.
Tharp, Carnegie Gas Co. 6.
Smith, Carnegie Gas Co. 1.
Lemon, So. P. O. Co. 41.
Lambert, So. P. O. Co. 9.
Lawrence, Hays & Roberts 3.
W. Va. Tract, Whitwood Oil Co. 29.
W. Va. Tract, W. T. Wyatt Est. 13.
Pope, E. E. Pope 2.
Wilson Hope Gas Co. 2.
Duke, Spence & Schrader 1.
Barlow, Rinehart Oil Co. 2.
Rutherford, Hope Gas Co. 1.
Ryan, Mellin & Co. 1.
Mason, Mason Oil Co. 2.

Wells Drilling

Mason, Hope Gas Co. 2.
Perrine, Hope Gas Co. 1.
Smith, Phila. Oil Co. 1.
Tharp, Carnegie Gas Co. 2.
Reed, Carnegie Gas Co. 1.
Bode, Star O. & G. Co 2
Leggett, Carter Oil Co. 1.
Spencer, Star O. & G. Co. 4.
Tharp, Carnegie Gas Co. 4.
Haden, Hope C. & R. Co. 1.
Lipscomb, C. W. McCall & Co. 1.
Baker, T. D. Lynch 1.
Pritchard, Ira D. Cox 1.
Mullinax, Carnegie Gas Co. 1.
Jonas Coss O. & G. Co. 3.
Hogue, Carnegie Gas Co. 1.
Haymond, Premier O. & G. Co. 1.
Freeman, Boyce Oil Co. 1.
Williamson, J. F. Deem & Co. 3.
Burke, Burke O. & G. Co. 1.
Seddicord heirs, So. P. O. Co. 1.
Newbrough, Arkansas O. & G. Co. 4.
Satterfield, Henneghan & Hanlon 1.
Rigs, 17; wells drilling, 23; total, 40.

WOOD COUNTY

Rigs

Wm. Rost, White Sand Oil Co. 3.

Wells Drilling

Volcanic Tract, Clarke O. Co. and Hines 51.
Volcanic Tract, Hope C. & R. Co. 4.
West, Big Sand O. Co. 1.
Stone, W. S. Stephens O. Co. 3.
Goldfish, Smith & Goldish 2.
Musser, Ridge O. & G. Co. 7.
Neal, L. P. Bickel & Son 1.
Rigs, 1; wells drilling, 7; total, 8.

GILMER COUNTY

Rigs

Goff, So. P. O. Co. 8.
Hardman, So. P. O. Co. 6, 7.
Allis, So. P. O. Co. 3.
Bush-Holy, Hope Gas Co. 2.
Harman, Hope C. & R. Co. 4.
Linger, Phila. Oil Co. 2.
Treny, Jas. Tierney 2.
Webster, So. P. O. Co. 5.
Hiney, Carnegie Gas Co. 1.
Campbell, Roanoke O. & G. Co. 1.
Tomey, Roanoke O. & G. Co. 1.
King, Chartiers Oil Co. 1.

Wells Drilling

Gainer, So. P. O. Co. 1.
Hardman, Hope C. & R. Co. 3.
Bennett heirs, Hope C. & R. Co. 1.
Wigner, Laurel Ck. O. Co. 1.
Jarvis, Hope C. & R. Co. 1.
Miller, Phila. Oil Co. 1.
Thompson Hope Gas Co. 1.
Gerwig, Leroy O. & G. Co. 1.
Rigs, 13; wells drilling, 8; total, 21.

BRAXTON COUNTY

Rigs

Sands, W. Va. Central G. Co. 1.
Chamberlain, W. Va. Central G. Co. 1.

Wells Drilling

Stout, P. R. O. & G. Co. 1.
Whitesell heirs, Phila. Oil Co. 1.
Rigs, 2; wells drilling, 2; total, 4.

WIRT COUNTY

Wells Drilling

Depue-McClung, Simms Oil Co. 1.
Daubenspeck, A. F. Daubenspeck 3.
Wells drilling, 2; total 2.

CALHOUN COUNTY

Rigs

Mitchell, M. F. Crawley 3.
Scott, Hope N. G. Co. 1.

Wells Drilling

Gainer, Hope Gas Co. 1.
Huffman, Chartiers Oil Co. 4.
Rigs, 2; wells drilling 2; total, 4.

PLEASANTS COUNTY

Rigs

Dailey, White & Casper 1.
Fleming, Creek Oil Co. 2.

Wells Drilling

Elder, White & Rea 1.
Wells, Schlagel & Freid 54.
Gard, Better Oil Co. 3.
Hammett, E. A. Ryan 6.
Yergin, J. S. Owens & Co. 1.
Rigs, 2; wells drilling, 5; total, 7.

ROANE COUNTY

Rigs

Larch, O. F. O. Co. 10.
Taylor, Taylor Bros. 1.

Wells Drilling

Craig, So. P. O. Co. 19.
Poole, S. A. Simons & Co. 2.
Newhart, Heck Oil Co. 1.
Davis, Heck Oil Co. 3.
Anderson, Fisher Oil Co. 3.
Ferrell, G. L. Cabot 1.
Milhoan R. D. Cummin 1.
Rigs, 7; wells drilling, 2; total, 9.

LINCOLN COUNTY

Wells Drilling

Pauley, A. C. Lawrence 8.
Tully, U. F. G. Co. 1.
Wells drilling, 2.

CLAY COUNTY

Rigs

King heirs, White Sand Pet. Co. 3.

PUTNAM COUNTY

Rigs

Wheeler Tract, Logan Gas Co. 2.

KANAWHA COUNTY

Rigs

Roane Land Co., Allegheny O. & G. Co. 2.
Robertson, U. F. G. Co. 1.
Goode, U. F. G. Co. 1.
Fry, K. C. O. & G. Co. 1.
Great K. P. L. & C. Co., Owens B. & M. Co. 15.
Ward heirs, U. F. G. Co. 43.

Wells Drilling

Koontz-Osborne, U. F. G. Co. 12, 13.
Martin, U. F. G. Co. 3.
Taylor, U. F. G. Co. 2.
Thompson, U. F. G. Co. 1.
Osborne Bros., Peerless C. B. Co. 13.
Great K. P. & L. Co., Owens B. & M. Co. 17.
Sunday Ck. C. Co., U. F. G. Co. 43.
Coalburg Collerie Co., So. P. O. Co. 7.
Rigs, 6; wells drilling, 9; total, 15.

BOONE COUNTY

Rigs

Williams Coal Co., Pure Oil Co. 202.
Mullins, Owens B. & M. Co. 1.

Wells Drilling

Williams Coal Co., Pure Oil Co. 198.
L. R. & P. Tract, Pure Oil Co. 7.
Coal River M. Co., Owens B. & M. Co. 18.
Bedford, Owens B. & M. Co. 3, 4.
Price, Owens B. & M. Co. 1.
Pryor-Allen, Owens B. & M. Co. 6, 7.
Rigs, 2; wells drilling, 7; total, 9.

CABELL COUNTY

Wells Drilling

Suty, Duty O. & G. Co. 1.
Williams, Commercial Gas Co. 1.
Davis, Aetna O. & G. Co. 1.
Williams, Aetna O. & G. Co. 1.
Bias, Aetna O. & G. Co. 1.
McGhee, Herman Moore 2.
Grass, Columbia G. & E. Co. 385.
Rigs, 0; wells drilling, 7; total, 7.

LOGAN COUNTY

Wells Drilling

Yawkey-Freeman, So. P. O. Co. 1.

RALEIGH COUNTY

Rigs

Rowland Land Co., Fisher Oil Co. 4.

WAYNE COUNTY

Wells Drilling

Guyandotte Land Assn., Columbia G. & E. Co. 383.

SOUTHEASTERN OHIO

MONROE COUNTY

Pratt, Torner & Co. 1 ..... gas
Dye, Bineger & Co. 1 5
Handschumaker, Simmons Oil Co. 1... 3
Platt, J. C. Carner & Co. 18 10
Starr N. T. Stadt & Co. 2 1
Thompson, Templeton & Co. 1 ..... gas

Wells completed 6
Production 19
Gas 3

PERRY COUNTY

Sunday Creek Coal Co., Sunday Creek Coal Co. 111 3
Melick Bros., Athy Oil Co. 6 ..... dry
Melick Bros., Athy Oil Co. 7 ..... dry
Donaldson, Allegheny Oil Co. 16 15

Wells completed 4
Production 17
Dry 2

HOCKING COUNTY

Ford, Gordon Oil Co. 4 15
Stout, Gordon Oil Co. 3 2
Lane, Lane O. & G. Co. 1 3
Green-Schultz, Wiser Oil Co. 3 70
Sunday Creek C. Co., Sunday Creek C. Co. 110 20
Smith, Sharren & Son 1 ..... dry
Coe, Sharren & Son 4 ..... gas
Lehman, Scott Westbrook 3 ..... gas
Stacy, Scott Westbrook 1 2
Helm Clay Co., Ark. N. G. Co. 2 3
Dawley, O. F. S. Co. 3 ..... gas
Nixon, Logan Gas Co. 1 ..... gas

Wells completed 13
Production 114
Dry 1
Gas 4

MUSKINGUM COUNTY

Weaver, Swingle O. & G. Co. 1..... gas

LICKING COUNTY

Boy Scout, Ralph Bros. 3 3
Parr, Ralph Bros. 2 2
Baunds, Spindler & Donaldson 3 4
Mossman, O. F. S. Co. 1 ..... gas
Reed, W. W. & A. T. Wehrle 1 75
Vermillion, W. W. & A. T. Wehrle 1... 10
Hawkins, W. W. & A. T. Wehrle 1 15
Fetty, W. W. & A. T. Wehrle 1 2

Wells completed 8
Production 112
Dry 0
Gas 1

NOBLE COUNTY

Noll, Noll Bros. 2 ..... dry
Crum, Urban Nau 11 ..... dry
Huffman, Estadt & Co. 1 1
Huffman, Estadt & Co. 2 1
Armstrong, White & McKelvey 12..... 1
Weisent, Weisent & Co. 3 2
Devold, C. V. Cain & Co. 5 1
McWilliams, Davis & Kemp 9 1
McWilliams, Davis & Kemp 10 1

Wells completed 9
Production 9
Dry 2
Gas 0

KNOX COUNTY

Veach, Amer. N. G. Co. 1 65
Hugh Green, Snyder & Roher 4 5
Miller, I. J. Denbow & Co. 23 5
Miller, I. J. Denbow & Co. 24 5
Miller, M. Snyder & Co. 1 3
Foster-Dodd, J. J. Reed & Co. 1 ..... gas

Schooler, Hatbrain & Weed 1 1
Schooler, Hatbrain & Weed 2 1
Snively, East Ohio Gas Co. 2 6

Wells completed 9
Production 91
Dry 0
Gas 1

FAIRFIELD COUNTY

Young, Montana O. & G. Co. 1 40
Kennedy, Montana O. & G. Co. 3 30
Kennedy, Montana O. & G. Co. 4 120
Johnson, Blume O. & G. Co. 1 ..... dry
Young, Carter Oil Co. 1 50
Brandt, Carter Oil Co. 1 25
Green, Rushville Trust Co. 1 ..... dry
Wagner, Burnsworth & Co. 1 10

Wells completed 8
Production 275
Dry 1

HOLMES COUNTY

Schantz, Medina Oil Co. 1 ..... gas
Patterson, Pure Oil Co. 1 5

Wells completed 2
Production 5
Gas 1

WASHINGTON COUNTY

Kesselring Pleasants County Bank 1 2
Matheny, Leidecker & Co. 2 2
Fauble, Holdren & Co. 3 1
Hoffman, Drake Oil Co. 2 ..... gas
Semon, W. A. Decker 2 2
Archer, C. E. Smith & Co. 3 10
Haynes, Dailey & Co. 1 ..... dry
Haas, Reynolds & Co. 2 1
Goodman Bros., Bedilion & Co. 1 1
Rosenbush, Becker & Co. 1 1
Rosenbush, Becker & Co. 2 2
Heckathorn, E. W. Thornily & Co. 8.... dry
Tryman, Honewell Oil Co. 1 ..... gas
Wharff, P. B. & T. Co. 5 ..... dry
Hupp-Murphy, Beeson & Athey 4 1
Daniels, Meister & Co. 16 1
Schramm, Schramm & Herman 1 2

Wells completed 17
Production 16
Dry 3
Gas 2

BELMONT COUNTY

Frazier, T. J. Reese & Co. 1 ..... dry

CARROLL COUNTY

Buchannon, Liston Parties 2 1

COLUMBIANA COUNTY

Hupp, N. G. Co. of W. Va. 1 2

MONROE COUNTY

Rigs

Scott, Sprague Oil Co. 3.
Hartshorn, Brister Oil Co. 1.

Wells Drilling

Harrington, Thornily & Poole 1.
Briggs, H. Beniger & Co. 1.
McVey, Carter Oil Co. 1.
Dillon, Johnson Oil Co. 1.
Rigs, 2; wells drilling, 4; total, 6.

PERRY COUNTY

Rigs

Tracy Est., Kachelmacher Est. 10.
Cooperrider, Midland O. Co. 2.
Melick Bros., Athy Oil Co. 4.
Ditto, Carter Oil Co. 2.
Bolt, Carter Oil Co. 5.
Carter-Griggs, Carter Oil Co. 2.
Burns heirs, E. Denman 4.

Wells Drilling

Holland, E. Keller Est. 7.
Trimmer, O. F. S. Co. 4.
Kermaon & Dunlap Carter Oil Co. 6.
Sunday Ck. C. Co., Sunday Ck. C. Co. 113.
Melick Bros., Athy Oil Co. 5.
Miser, Carter Oil Co. 7.
McCourtney, Southern Oil Co. 7.
Rigs, 7; wells drilling, 7; total, 14.

HOCKING COUNTY

Rigs

Tritch, Carter Oil Co. 6.
Johnston, Griffin Prod. Co. 6.
Cobb-Bradley, Nyppeno O. Co. 11.
Trobridge, Preston Oil Co. 5.

Wells Drilling

Tracy Est., Kachelmacher Est. 10.
Sunday Ck. Co., Sunday Ck. Co. 114.
Stacy, Sharren & Son 3.
N. Fireproofing, C. H. Bell & Co. 3.
Helm Clay Co., Ark. N. G. Co. 3.
Vickers, Preston Oil Co. 1.
Stone, Preston Oil Co. 1.
Rigs, 4; wells drilling, 7; total, 11.

MUSKINGUM COUNTY

Wells Drilling

Shaw, Pure Oil Co. 2.
Montgomery, Pure Oil Co. 3.
Knapp, Sun Oil Co. 3.
Berringer, Pure Oil Co. 2.
Doser, Swingle O. & G. Co. 1.
Whitehouse, Ralph Bros. 6.
Rigs, 0; wells drilling, 6; total, 6.

LICKING COUNTY

Rigs

Rector, Ohio F. S. Co. 1.
Romine, Carter Oil Co. 2.

Wells Drilling

Redick, W. W. & A. T. Wehrle 3.
Wolcott, W. W. & A. T. Wehrle 2.
Rigs, 2; wells drilling, 2; total, 4.

NOBLE COUNTY

Wells Drilling

Brodel, Roberson & Co. 4.
Brown, White, McKelvey & Co. 3.
Lowe, Bonwell & Co. 1.
Rigs, 0; wells drilling, 3; total, 3.

COSHOCTON COUNTY

Rigs

Wolford, Spindler, Donland & Co. 4.
McKee, Spindler, Donland & Co. 4.
Ashcraft, Leonard O. & G. Co. 4.
J. Ashcraft, Leonard O. & G. Co. 5.
Martin, Carter Oil Co. 1.

Wells Drilling

Norris, Pure Oil Co. 1.
Fawcett, Trinway O. & G. Co. 1.
Giffen, Ohio F. S. Co. 1.
Rigs, 5; wells drilling, 3; total, 8.

KNOX COUNTY

Wells Drilling

Green, Snyder & Roher 4.
Miller, Marion Snyder & Co. 10.
Miller, Curran Oil Co. 2.
Dodd, J. J. Reed & Co. 2.
Groves heirs, Cora Clark 2.
Snively, East Ohio P. & R. Co. 3.
Pipes, Reno Oil Co. 2.
Miser, Preston Oil Co. 1.
Rigs, 0; wells drilling, 8; total, 8.

FAIRFIELD COUNTY

Rigs

Weaver, Carter Oil Co. 8.
Hull, J. F. Thompson & Co. 1.
McVey, Carter Oil Co. 2.

Wells Drilling

Elder, Lincoln O. & G. Co. 1.
Brandt, Carter Oil Co. 2.
Young, Montana O. & G. Co. 2.
Miller, Ruff & Stewart 1.
Householder, Planet Oil Co. 1.
Rigs, 3; wells drilling 5; total, 8.

HOLMES COUNTY

Rigs

Smith, Pure Oil Co. 4.
Findley, Medina O. & G. Co. 1.
Close, Kline & Co. 1.
Baker, East Ohio Gas Co. 1.
Conner, Medina O. & G. Co. 1.
Fendrick, Medina O. & G. Co. 1.
Graham, Pure Oil Co. 1.
Keiser, N. W. Pet. Co. 1.
Craig, Ohio F. S. Co. 1.

Wells Drilling

Gindslinberger, Medina O. & G. Co. 1.
Knowells, East Ohio Gas Co. 1.
Jarvis, East Ohio Gas Co. 1.
Connor, East Ohio Gas Co. 1.
McMillan, Medina O. & G. Co. 1.
Carpenter, Pure Oil Co. 2.
Rigs, 9; wells drilling, 6; total, 15

MEIGS COUNTY

Rigs

Ihle, Barmer Oil Co. 2.
Mus, Ohio F. S. Co. 1.
Holter, Juffler Oil Co. 1.

Wells Drilling

Kreuter, Pure Oil Co. 1.
Rigs, 3; wells drilling, 1; total, 4.

MORGAN COUNTY

Wells Drilling

Rarden, Penova O. & G. Co. 10.
Rigs, 0; wells drilling, 1; total, 1.

WASHINGTON COUNTY

Rigs

Huling Est., O. O. Newlen 9.
Cochrane, F. W. Cochrane Est. 3.
Rosenbush, Otto Becker & Co. 3.
Murray, Beeson & Athey 1.

Wells Drilling

Eddy, Shankland & Co. 4.
West, Ottis Reckard & Co. 4.
Mendenhall, Elsie Martin & Co. 1.
Hoffman, Drake Oil Co. 2.
Templeton heirs, Jas. Baldwin & Co. 1.
Haynes, Daily & Co. 2.
Goodman Bros., Bedilion & Co. 2.
Stacy, S. J. Bogard & Co. 1.
Lauer, W. H. Loman & Co. 1.
Holland, J. C. Carner & Co. 1.
Radenbaugh heirs, S. A. Taylor & Co. 4.
Rigs, 4; wells drilling, 11; total, 15.

HARRISON COUNTY

Wells Drilling

Heavilin, S. M. Elliott 6.

CARROLL COUNTY

Wells Drilling

Taylor, Taylor N. G. Co. 6.

COLUMBIANA COUNTY

Wells Drilling

Vermillion, Smithfield O. & G. Co. 1.
Gobly, Duncan Oil Co. 1.
Rigs, 0; wells drilling, 2; total, 2.

CENTRAL OHIO

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Fairfield	2	0	1	1	3	1	4
Knox	3	10	1	1	2	4	6
Ashland	5	0	3	2	6	12	18
Medina	13	5	4	8	8	15	23
Lorain	1	0	0	1	2	9	11
Wayne	12	15	4	7	15	29	44
Richland ..	0	0	0	0	0	1	1
Vinton	0	0	0	0	1	1	2
Hocking	1	0	0	1	2	5	7
Holmes	5	0	1	4	11	11	22
Coshocton ..	0	0	0	0	1	1	2
Jackson	5	0	0	5	5	7	12
Athens	3	0	0	3	3	1	4
Meigs	0	0	0	0	1	0	1
Gallia	0	0	0	0	0	1	1
Cuyahoga ..	1	0	1	0	0	0	0
Lawrence ...	0	0	0	0	1	0	1
Total Oct..	51	30	15	33	61	98	159
Total Sept.	56	331	20	28	54	107	161
Difference.	5	301	5	5	7	9	2

WELLS COMPLETED

FAIRFIELD COUNTY

Walnut—M. W., Watson, Ohio Fuel Gas 1 ..... gas
M. F. Taylor, Logan Gas 4 ..... dry

Wells completed 2
Dry 1
Gas 1

KNOX COUNTY

Brown—Gustave Snively, East Ohio Gas 3 10
Lucyhifer, East Ohio Gas 1 ..... dry
Clay—Ben Ross, Helsey Gas 3 ..... gas

Wells completed 3
Production 10
Dry 1
Gas 1

ASHLAND COUNTY

Hanover—J. Tschantz, Logan Gas 1.... dry
J. B. Date, East Ohio Gas 3, 4..... gas
Mohican—Lybarger, Logan Gas 2..... dry
Orange—O. H. Vance, Logan Gas 1.... dry

Wells completed 5
Dry 3
Gas 2

MEDINA COUNTY

Harrisville—J. H. Crawford, Hulse & Kundtz 1 ..... gas
Liverpool—William Nilges, Logan Gas 1 gas
Dietrick, Logan Gas 1..... gas
G. F. Moehler, Ohio Fuel Gas 1..... dry
Lafayette—A. F. Collins, Ohio Fuel Gas 2 ..... gas
Chatham—A. B. Buchannan, Brinker Bros. & Co. 3..... dry
Litchfield—A. Jenkins, Hulse & Kundtz 1 5
York—G. F. Gunkleman, Logan Gas 1.. gas
A. N. Weiss, Logan Gas 1..... dry
Fred Kemp, Logan Gas 1..... gas
Fred Todd, Ohio Fuel Gas 2..... gas
George Acker, Ohio Fuel Gas 2..... gas
A. M. Hoeckert, Ohio Fuel Gas 2..... dry

Wells completed 13
Production 5
Dry 4
Gas 8

LORAIN COUNTY

Grafton—E. F. Schaffer, East Ohio Gas 2 ..... gas

WAYNE COUNTY

East Union—A. P. Walter, Logan Gas 1 dry
Wayne—S. McCoy, East Ohio Gas 1.... dry
Martin, Cole, Klise-Eckstein-McCann 1 ..... gas
Cannan—A. A. Fetzer, Logan Gas 2.... gas
V. Everwine, Ohio Fuel Gas 1. .... dry
F. & E. Jordan, Central Ohio Gas 1.. gas
R. S. Nosker, Warn & Jordan 1..... gas
Byron Brady, Caskey & Peake 1..... gas
F. Fike, Brinkerhoff & Co. 1..... 15
Plain—C. O. Fortz, East Ohio Gas 3.... gas
D. Finney, Logan Gas 2..... dry
J. J. Risser, Logan Gas 3..... gas

Wells completed 12
Production 15
Dry 4
Gas 7

HOCKING COUNTY

Benton—G. A. Schael, Ohio Fuel Gas 1. dry

HOLMES COUNTY

Ripley—J. T. Tschantz, Central Ohio Gas 4 ..... gas
J. B. Williams, Central Ohio Gas 4.. gas
L. C. Sprowl, Ohio Oil 1..... dry
Monroe—J. A. Baker, East Ohio Gas 1.. gas
Prairie—Avery Metcalf, East Ohio Gas 1 gas

Wells completed 5
Dry 1
Gas 4

JACKSON COUNTY

Washington—S. B. Tripp, Ohio Fuel Gas 2 ..... gas
J. W. Harbinger, Ohio Fuel Gas 3.... gas
Franklin—T. H. Johnson, Ohio Fuel Supply 1 ..... gas
Lick—A. R. Peters, Ohio Fuel Supply 1. gas
J. C. Pool, Ohio Fuel Gas 3..... gas

Wells completed 5
Gas 5

ATHENS COUNTY

Carthage—W. & H. Dye, Logan Gas 2.. gas
A. J. Russell, Logan Gas 4..... gas
E. Dunlavey, Ohio Fuel Supply 1..... gas

Wells completed 3
Gas 3

CUYAHOGA COUNTY

Brooklyn—W. J. Huey, East Ohio Prod. & Refg. 1 ..... dry

FAIRFIELD COUNTY

Rigs

Walnut—S. W. Kinney, Logan Gas 4.
R. E. Helnick, Ohio Fuel Gas 2.
Richland—T. E. Drum, Ohio Fuel Gas 1

Wells Drilling

Rush Creek—Alta R. Barr, Ohio Fuel Gas 1.
Rigs, 3; wells drilling, 1; total, 4.

KNOX COUNTY

Rigs

Brown—D. Colopy, East Ohio Gas 1.
C. L. Horn, East Ohio Gas 1.

Wells Drilling

Brown—Fred Motz, East Ohio Gas 2.
S. D. Reed, East Ohio Gas 1.
Clay—J. F. Dodd, Bell Bros. 2.
Butler—W. B. Griffin, Ohio Fuel Gas 1.
Rigs, 2; wells drilling, 4; total, 6.

ASHLAND COUNTY

Rigs

Hanover—J. F. Jones, Ohio Fuel Gas 1.
Rosa Derr, Logan Gas 2.
L. E. Cady, Logan Gas 1.
J. B. Date, East Ohio Gas 5.
E. Kick, East Ohio Gas 1.
Mohican—E. E. Bowers, Logan Gas 2.

Wells Drilling

Hanover—William Fisher, Ohio Fuel Gas 1.
William Black, Ohio Fuel Gas 1.
J. Gellers, Ohio Fuel Gas 1.
Mary A. Sellers, Logan Gas 1.
R. Ackerman, East Ohio Gas 1.
F. M. Date, East Ohio Gas 1.
Fred Feichter, Logan Gas 1.
Mohican—C. A. Pearce, Logan Gas 1.
Orange—Elna Berkey, Logan Gas 1.
Alex Phillips, Logan Gas 3.
William Monteith, Logan Gas 3.
Jackson—H. L. Weller, Ohio Fuel Gas 1.
Rigs, 6; wells drilling, 12; total, 18.

MEDINA COUNTY

Rigs

Westfield—L. H. Jones, Daugherty Bros. 1.
Litchfield—Roman Walter, Logan Gas 1.
Ellen G. Rice, East Ohio Gas 1.
York—Charles Wolfe, Central Ohio Gas 2.
P. H. Thompson, Hulse & Kundtz 3.
G. N. Hazen, West & Locke 2.
P. Diehl, Logan Gas 1.
A. B. Weiss, Logan Gas 1.

Wells Drilling

Liverpool—Andy Nilges, Logan Gas 2.
Lafayette—G. W. Carston, Ohio Fuel Gas 1.
Chatham—C. G. Chapman, Vale Oil 35.
C. G. Chapman, East Ohio Gas 4.
Medina—William Schaber, Ohio Fuel Gas 1.
York—E. H. Fahrion, Logan Gas 2.
Myra Brogan, Logan Gas 2.
H. G. Wolfe, Logan Gas 1.
H. C. Speith, Logan Gas 3.
Fred Gayer, Logan Gas 3.
George Acker, Ohio Fuel Gas 3, 4.
J. A. Wolfe, Ohio Fuel Gas 3.
Charles Wolf, Central Ohio Gas 1.
George Starr, Central Ohio Gas 1.
Rigs, 8; wells drilling, 15; total, 23.

LORAIN COUNTY

Rigs

Columbia—Richard Putt, Ohio Fuel Gas 1.
Clara J. Elder, Ohio Fuel Gas 1.

Wells Drilling

Penfield—L. & C. Wolfe, C. W. Shaffer 2, 3, 4, 7, 8.
Grafton—E. & E. Rice, Ohio Fuel Gas 1.
C. F. Schaffer, East Ohio Gas 3.
Lagrange—Al Bringe, Ohio Fuel Gas 1.
Avon Lake Village—F. J. Krebs, J. W. Cushing 2.
Rigs, 2; wells drilling, 9; total, 11.

WAYNE COUNTY

Rigs

Franklin—Newton Jones, Ohio Oil 1.
Wayne—L. Durstin, Logan Gas 1.
M. S. Buckholtz, Ohio Fuel Gas 2.
G. E. Bucher, Ohio Fuel Gas 1.
W. & M. Reese, Central Ohio Gas 1.
Cannan—J. W. Scholl, Logan Gas 1.
W. & A. Notestone, Logan Gas 3.
J. & C. Irwin, Logan Gas 2.
T. A. Armstrong, Logan Gas 1.
C. & L. Collert, Logan Gas 1.
S. Whonsettler, Bert Harder & Co. 1.
L. H. Grunder, Klise-Eckstein-McCann 1.
Plain—Kate Brown, East Ohio Gas 2.
C. C. Hoolman, Logan Gas 1.
Ora Flickinger, Logan Gas 1.

Wells Drilling

Wooster—W. M. Orr, Ohio Oil 1.
Congress—J. A. Lucas, Logan Gas 2.
J. M. Marsh, John Gaut & Co. 1.
John Ferguson, Ohio Fuel Gas 1.
J. & A. Gindelsperger, Hulse & Kundtz 1.
Milton—Dan Graber, East Ohio Gas 1.
R. Brabill, East Ohio Gas 1.
Wayne—C. W. Yates, Ohio Fuel Gas 1.
M. M. Zimmerman, Ohio Fuel Gas 1.
F. Pressler, Logan Gas 1.
C. L. Alcshouse, Logan Gas 1.
E. Carmony, Burtner, Morgan & Co. 1.
Chippewa—Pazquale Volpel, East Ohio Gas 1.
Cannan—O. G. Pinkley, Logan Gas 2.
W. F. Funk, Logan Gas 2.
F. H. McAfee, Ohio Fuel Gas 1.
T. Runnacker, Ohio Fuel Gas 2.
S. C. Jackson, Ohio Fuel Gas 1.
F. J. Lehman, Ohio Fuel Gas 1.
D. V. Rowe, Ohio Fuel Gas 2.
O. G. Pinkley, Ohio Fuel Gas 2.
J. E. Blocher, Klise-Eckstein-McCann 1.
R. S. Nosker, Central Ohio Gas 1.
H. E. Geyer, Central Ohio Gas 1.
D. Willis, Creston Gas 1.
S. Eby, C. S. Eby & Co. 1.
A. Smith, Brinkerhoff & Co. 2.
R. C. Grandea, Bowers & Co. 1.
Wayne—E. Carmony, Burtner, Morgan & Co. 1.
S. Garn, Logan Gas 1.
Rigs, 15; wells drilling, 29; total, 44.

RICHLAND COUNTY

Wells Drilling

Troy—Thomas Dunshee, Lexington O. & G. 1.

VINTON COUNTY

Rigs

Clinton—M. Foster, Ohio Fuel Gas 1.
Rigs, 1; wells drilling, 1; total, 2.

HOCKING COUNTY

Rigs

Perry—Alice McClelland, Ohio Fuel Gas 1.
J. A. Friend, Ohio Fuel Gas 1.

Wells Drilling

Benton—J. S. & C. Cain, Logan Gas 1.
C. H. Rathbone, Logan Gas 1.
J. L. Mauk, Logan Gas 3.
C. W. Davis, Ohio Fuel Gas 1.
Elmer Pettitt, Ohio Fuel Gas 2.
Rigs, 2; wells drilling, 5; total, 7.

HOLMES COUNTY

Rigs

Ripley—M. A. Martin, East Ohio Gas 1.
Monroe—T. & A. Conner, Central Ohio Gas 1.
A. W. Fendrick, Central Ohio Gas 1.
H. E. Clinage, Ohio Fuel Gas 1.
Oscar Koras, Ohio Fuel Gas 1.
C. G. Jarvis, East Ohio Gas 1.
Hardy—Jacob Uhl, East Ohio Gas 2.
Washington—H. G. Huffman, Logan Gas 1.
Prairie—F. & I. Phillips, Ohio Oil 1.
C. Lecky, Ohio Fuel Gas 2, 3.

Wells Drilling

Ripley—E. & R. Scott, East Ohio Gas 2.
Al Weimer, East Ohio Gas 1.
J. B. Shoup, Ohio Fuel Gas 1.
B. W. Todd, Logan Gas 1.
Monroe—H. E. McMillan, Central Ohio Gas 1.
T. P. Conner, East Ohio Gas 1.
Hardy—J. Gindelsperger, Central Ohio Gas 1.
Washington—Mgdt. Lozier, Logan Gas 1.
W. H. Heffelfinger, Logan Gas 1.
Prairie—E. P. Nowels, East Ohio Gas 1.
Sam Lefever, Ohio Oil 2.
Rigs, 11; wells drilling, 11; total, 22.

COSHOCTON COUNTY

Rigs

Newcastle—William Johnson, Logan Gas 1.

Wells Drilling

Newcastle—Mart Mizer, Logan Gas 1.
Rigs, 1; wells drilling, 1; total, 2.

JACKSON COUNTY

Rigs

Washington—Steven Tripp, Ohio Fuel Gas 3.
Mary E. Tripp, Ohio Fuel Gas 1.
Isaac Mates, Ohio Fuel Gas 1.
Milton—A. S. Dempsey, Chio Fuel Gas 1.
W. W. Neary, Ohio Fuel Gas 1.

Wells Drilling

Washington—Steven Tripp, Ohio Fuel Gas 2.
Minnie Walker, Ohio Fuel Gas 3.
J. W. Harberger, Ohio Fuel Gas 4.
Coal—Stephenson, Ohio Fuel Gas 1.
W. E. Dixon, Ohio Fuel Supply 1.
Franklin—William Steele, Ohio Fuel Supply 2.
Lick—Grafton McGhee, Ohio Fuel Gas 1.
Rigs, 5; wells drilling, 7; total, 12.

ATHENS COUNTY

Rigs

Carthage—M. V. Barnhart, Ohio Fuel Supply 1.
Arthur Cole, Logan Gas 1.
W. & M. Dye, Logan Gas 3.

Wells Drilling

Amos—W. R. Phillips, Ohio Fuel Supply 1.
Rigs, 3; wells drilling, 1; total, 4.

MEIGS COUNTY

Rigs

Salsbury—A. J. Smith, Ohio Fuel Supply 1.

GALLIA COUNTY

Wells Drilling

Cheshire—F. H. Sternberger, Ohio Fuel Supply 1.

LAWRENCE COUNTY

Rigs

Washington—Levi P. York, Ohio Fuel Supply 1.

LIMA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wood	13	265	1	2	1	12	13
Hancock	6	109	1	0	0	11	11
Allen	9	154	1	1	1	4	5
Auglaize	3	17	1	0	0	7	7
Sandusky	1	7	0	0	1	1	2
Mercer	9	65	3	0	0	15	15
Van Wert	4	63	1	0	0	1	1
Seneca	3	0	3	0	0	3	3
Lucas	1	0	1	0	0	1	1
Ottawa	4	26	0	0	0	2	2
Darke	3	18	0	0	0	8	8
Paulding	1	10	0	0	0	0	0
Hardin	2	0	1	1	0	1	1
Shelby	1	1	0	0	0	0	0
Michigan	0	0	0	0	0	2	2
Total Oct..	60	735	13	4	3	68	71
Total Sept.	71	1,416	3	2	4	81	85
Difference.	11	681	10	2	1	13	14

WELLS COMPLETED

WOOD COUNTY

Plain—H. Goodenough, Hulse & Kuntz 1 35
J. H. Haisy, M. B. Chidester 13..... 40
J. Hughes, Ohio Oil 5, 6, 7, 8, 9, 10, 11, 13, 16, 17, 18..... abd
Henry—John Cahill, Star Oil 2..... 5
P. Manville, L. D. Langmade 3..... 35
H. P. Myers, Ohio Oil 4, 7, 13..... abd
Bloom—F. B. Loose, Western Ohio Oil Co. 2 90
Walbridge, Ohio Oil 1..... 5
Liberty—Anna Phillips, A. F. Stockwell 4 ..... dry
Sangiler-Mercer, Ohio Oil 7, 9..... abd
M. Sawyer, Ohio Oil 4..... abd
P. F. Donzey, Ohio Oil 18..... abd
J. E. Sommerset, Ohio Oil 2, 3..... abd
Lake—E. Berndt, C. F. Zeising & Co. 2 20
Perrysburg—George Dauer, John E. Welton 1 10
Perry—C. & J. Bresler, Dennis Bros. 1. gas
Washington—O. Cummings, Dunbridge Oil 1 5
Middleton—Hugh Stewart, Hugh Stewart 1 ..... gas
M. Bruce, Five Points Oil 4..... 20

Wells completed 6
Production 265
Dry 1
Gas 2
Abandoned 20

HANCOCK COUNTY

Allen—Hy. Overholt, Overholt Oil 1.... 25
A. Kuhlman, E. J. Pool Estate 10.... dry
Union—Fred Adams, VanLue Oil & Keiser 4 20
H. F. Gorby, Ohio Oil 1, 3, 4, 5, 6, 8, 9 ..... abd
Eagle—H. P. Smith, Fuller & Co. 12... 1
J. H. Haley, B. Porter & Co. 15..... 40
Orange—Henry Arnold, Ohio Oil 1, 2, 3, 4 ..... abd
A. W. Scothorn, Ohio Oil 1, 2, 3..... abd
Biglick—J. D. Moore, Cochran & Moore 1 23

Wells completed 6
Production 109
Dry 1
Abandoned 14

ALLEN COUNTY

Bath—E. W. Prowant, C. A. Peavey & Co. 5 15
Spencer—R. B. Harbison, The New Gas Co. 1 ..... gas
Mathias Etzgen, Indiana Oil 3..... 50
Fred Etzkorn, Federal Oil 2..... 30
James Louth, Ohio Oil 4..... 12
McCracken, Ohio Oil 6..... 12
Shawnee—J. W. Sellers, Robinson & Co. 1 ..... dry
Marion—Phil Heltner Federal Oil 2... 25
John Lucius, Federal Oil 2..... 10

Wells completed 9
Production 154
Dry 1
Gas 1

AUGLAIZE COUNTY

Logan—Charles Hines, George D. Whipple 1 ..... dry
F. Daniels, Loeber & Werk 1..... 7
J. H. Gochenour, Lang & Kirk 16... 10
F. W. Slite, Ohio Oil 2, 3, 5..... abd
J. Burkhart, Ohio Oil 6, 7, 9..... abd

Wells completed 3
Production 17
Dry 1
Abandoned 6

SANDUSKY COUNTY

Scott—S. Sprout, Adams O. & G. 11.... 7
Sandusky—P. H. Hetrick, Paragon Refg. 2 ..... abd
J. Waggoner, Ohio Oil 7..... abd
George Wilhelm, John Neisett Oil 1.. abd

Wells completed 1
Production 7
Abandoned 3

MERCER COUNTY

Recovery—J. Fullenkamp, Rice & Milligan 1 2
Granville—J. Longenkamp, Thompson & Co. 1 3
S. Wendel, V. L. Lowery & Co. 3..... 25
Gibson—M. Brymyer, Unknown 1..... 5
John Tenney, L. G. Neely Oil 1..... 15
J. Brunswick, Logan Oil 1..... 15
Butler—B. Dues, Mace, Day & Yount 1 dry
Liberty—Radabaugh-Vining 5, 6..... dry
J. E. Lloyd, N. T. Staudt & Co. 1.... abd
Black Creek—Granbarger No. 2, Ohio Oil 1, 2, 3, 4, 5, 6, 7..... abd

Wells completed 9
Production 65
Dry 3
Abandoned 8

VAN WERT COUNTY

Jennings—John Mueller, John Mueller 7 40
York—Mgdt Hiller, Zeigen & Pugh 3... 3
Richard Evans, Wheeler Oil 1..... 20
Liberty—W. H. High, Boud & Stelzer 1. dry

Wells completed 4
Production 63
Dry 1

SENECA COUNTY

Eden—W. S. Burns, Sun Co. 6..... dry
Clinton—T. C. Boes, E. R. Edson & Son 1 ..... dry
Pleasants—T. B. Toombs, D. R. McCray 6 ..... dry

Wells completed 3
Dry 3

LUCAS COUNTY

Adams—Farnsworth, Farnsworth & Co. 1 ..... dry

OTTAWA COUNTY

Harris—Belle Clay, Zorn-Hornung Oil 5 12
N. J. Henry, Scott Oil 2..... 4
Carl Blausey, T. F. Lewis & Co. 2.... 4
H. Dietermyer, Harris Oil 5..... 6

Wells completed 4
Production 26

DARKE COUNTY

Mississinewa—J. Miller, E. G. & James Henderson 8 15
Allen—George Gerlock, Mondarke Oil 10 10
A. Seifring, Mondarke Oil 3..... 3

Wells completed 3
Production 18

PAULDING COUNTY

Brown—W. H. Patterson, Putnam County O. & Refg. 1..... 10

HARDIN COUNTY

Cuma—C. A. Robenson, Central Ohio Gas 1 ..... gas
Marion—S. H. Cooney, Rendell, Holmes & Co. 1..... dry

Wells completed 2
Dry 1
Gas 1

SHELBY COUNTY

Van Buren—E. Hagermyer, Van Buren Oil 1 1

WOOD COUNTY
Rigs

Plain—Pinert-Munn, Paragon Refg. 24.

Wells Drilling

Plain—A. J. Schauweker No. 2, Ohio Oil 5. W. C. Blystone, R. C. Shuler & Co. 4. Joe hrs, Allen Oil 1.
Henry—L. Cable, Ohio Oil 66.
Bloom—Delia Clark, Heacock Oil 18. George Grant, George Grant 4.
Webster—W. R. Melcher, Flaherty Oil 3. W. Oberdecker, Johnson & Grolle 2.
Lake—William Linke, Troy O. & G. 10. Emil Berndt, C. F. Zeising & Co. 3.
Perrysburg—Joseph Carpenter, Ohio Oil 1. O. B. Spilker, Davis & Carroll 1. Rigs, 1; wells drilling, 12; total, 13.

HANCOCK COUNTY
Wells Drilling

Allen—E. C. Showman, Dave King Jr. & Co. 17.
Liberty—E. E. Spoon, Spoon & Co. 1. J. B. Wagner, A. N. Bryson & Co. 1.
Pleasants—Cain-Henning, Bath Township Oil 2.
Union—Phil Gehren, Beatty-Nickle Oil 8. Phil Schwinn, Ohio Oil 15.
Eagle—J. McClelland, B. Porter & Co. 1. J. H. Haley, B. Porter & Co. 16. Lem Aurand, Porter & Hovis 9. Jake Fellers, Fuller & Co. 13.
Biglick—J. D. Moore, Cochran & Moore 2. Wells drilling, 11.

ALLEN COUNTY
Rigs

Bath—Elias Lewis, C. A. Peavey & Co. 7.

Wells Drilling

Spencer—Mathias Etgen, Indian Oil 4.
Marion—Fred Miller, Federal Oil 1. Ed Youngpeter, Federal Oil 1. Phil Hiltner, Federal Oil 3. Rigs, 1; wells drilling, 4; total, 5.

AUGLAIZE COUNTY
Wells Drilling

Douchouquet—Meckling & Co., R. S. Cheuvrant 4. J. Zink, Lang & Kirk 1.
Logan—G. Foltz, Shappel & Whipple 1. L. V. Bowersock, Wesley Sprague 5. Alice Young, W. B. Jack 2. W. Thomas, Bend O. & G. 3.
Moulton—John Butcher, Charles Mertz & Co. 2. Wells drilling, 7.

SANDUSKY COUNTY
Rigs

Washington—J. C. Bergman, Paragon Refg. 6.

MERCER COUNTY
Wells Drilling

Recovery—J. Fullenkamp, Rice & Milligan 2.
Newcomer, M. F. Newcomer & Co. 5.
Granville—J. Longenkamp, Thompson & Co. 2.
S. Wendel, V. G. Lowery & Co. 4.
Hopewell—Perry Miller, June Oil 4. J. Tilton, June Oil 1.
J. Reckendence, B. Y. J. Oil 1.
C. Brown, C. M. Mayhugh 1.
Gibson—Mose Pinter, L. G. Oil 1. J. W. Myers, A. W. Neeley & Co. 1. P. Wanarine, A. J. Weiderman & Co. 1.
Washington—H. Wellis, McClure & Co. 1. L. Adams, McClure & Co. 1.
Liberty—Brehm Bros., Celina Pet. 1. John Brehm, Celina Pet. 1. Wells drilling, 15.

VAN WERT COUNTY
Wells Drilling

York—J. M. Strothers, C. E. Elliott 1.

SENECA COUNTY
Wells Drilling

Eden—H. H. Seiple, Sun Co. 2.
Clinton—Ida Geyer, Geyer Bros. 2.
Pleasants—Frank Hoover, E. R. Edson & Son 1. Wells drilling, 2.

LUCAS COUNTY
Wells Drilling

Monclova—William Black, Swan Creek O. & G. 2.

OTTAWA COUNTY
Wells Drilling

Harris—Belle Clay, Zorn-Hornung Oil 6. E. Sarnes, Scott Oil 1. Wells drilling, 2.

DARKE COUNTY
Wells Drilling

Mississinewa—Babe Bowers, Pyramid Oil 1. G. W. Ream, Pyramid Oil 4. C. R. Stickleman, M. P. Colt & Co. 6. P. Slaughter No. 2, E. G. & James Henderson 1. C. Ludy, I. Hance & Co. 1.
York—Fetterman, Pyramid Oil 1.
Wabash—Coons, Kinney & Co. 1.
Patterson—C. W. Bowman, M. P. Colt & Co. 1. Wells drilling, 8.

HARDIN COUNTY
Wells Drilling

Roundhead—A. F Harpster, Smith Oil 1.

MICHIGAN

MONROE COUNTY
Wells Drilling

Dundee—Frank Roe, Jackson County O. & G. 1.

JACKSON COUNTY
Wells Drilling

Napoleon—Silvers, Jackson County O. & G. 1.

ILLINOIS

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Clarke	2	45	1	0	0	2	2
Cumberland.	0	0	0	0	0	1	1
Crawford	3	3	2	0	0	3	3
Lawrence	2	15	0	0	0	1	1
Jasper	0	0	0	0	0	1	1
Monroe	0	0	0	0	0	4	4
Coles	0	0	0	0	0	1	1
Wabash	0	0	0	0	3	3	6
Jackson	4	13	3	0	0	2	2
Jefferson	0	0	0	0	0	1	1
Union	0	0	0	0	0	1	1
Total Oct..	11	74	6	0	3	20	23
Total Sept.	16	194	9	2	4	21	25
Difference.	5	120	3	2	1	1	2

COMPLETED WELLS

CLARK COUNTY

Martinsville—Charles Lowe, McArthur & Co. 1 ..... dry
J. Watkins, Ohio Oil 9..... 45

Wells completed 2
Production 45
Dry 1

CRAWFORD COUNTY

Oblong—W. Wall, Seth McGee 23..... 2
Prairie—E. Wilburt, Watson Oil 5..... dry
C. H. Wade, Dr. O. L. Baldridge 1. dry

Wells completed 3
Production 2
Dry 2

LAWRENCE COUNTY

Dennison—L. M. Seed, Big Four O. & G. 18 10
Bond—L. D. Miller, J. D. Toomey 1.... 5

Wells completed 2
Production 15

JACKSON COUNTY

Bradley—McBride, Mid-Egypt O. & G. 1 dry
Gerberding, Mid-Egypt O. & G. 2..... 12
Ora—Unknown 1, 2 ..... dry

Wells completed 4
Production 12
Dry 3

CLARK COUNTY
Wells Drilling

Parker—Elder Lee, Cincho Oil 4.
Martinsville—J. D. Nichols, William Carper 1. Wells drilling, 2.

CUMBERLAND COUNTY
Wells Drilling

Sumpter—J. Brewer, Illinois Oil 1.

CRAWFORD COUNTY
Wells Drilling

Oblong—S. Houghton, Liberty O. & G. 19.
Robinson—N. C. Boyd, Fred Nurns & Co. 3.
Honey Creek—L. N. Tohill, James Pease & Co. 1. Wells drilling, 3.

LAWRENCE COUNTY
Wells Drilling

Dennison—E. L. Barnett, Ohio Oil 11.

JASPER COUNTY
Wells Drilling

Hunt City—O. H. Madden, Grant Jessup 1.

MONROE COUNTY
Wells Drilling

Waterloo—Dena Acker 8-A, Kaskaskia Oil 7.
Dena Acker 40-A, Henry Schneider & Co. 5.
C. Rueck, Tucker & Co. 5.
C. Wismuth, East St. Louis Drg. 8. Wells drilling, 4.

COLES COUNTY
Wells Drilling

Hutton—Cephus Goble, C. J. Appleman & Co. 1.

WABASH COUNTY
Rigs

Wabash—A. Hosmer, Joe Young & Co. 1.
G. D. Smith, Joe Young & Co. 6.
Della Wright, Hartman & Parrott 4.

Wells Drilling

Wabash—E. K. Adams, Harry E. Risley & Co. 2.
Friendsville—Charles Schrader, Sharon Price & Co. 1.
Mt. Carmel—Veihman, George Porter & Co. 1. Rigs, 3; wells drilling, 3; total, 6.

JACKSON COUNTY
Wells Drilling

Bradley—McComb-Williams, Mid-Egypt O. & G. 4.
Carter, Mid-Egypt O. & G. 9. Wells drilling, 2.

JEFFERSON COUNTY
Wells Drilling

Pendleton—R. I. Esters, Updyke Oil 1.

UNION COUNTY
Wells Drilling

Bald Knob—Near Alta Pass, W. McSmith 1.

INDIANA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Jay	6	170	2	0	0	13	13
Adams	3	55	0	0	0	1	1
Grant	1	5	0	0	0	1	1
Gibson	1	60	0	0	0	7	7
Pike	0	0	0	0	0	3	3
Sullivan	2	1	0	1	0	5	5
Greene	1	0	1	0	0	0	0
Total Oct..	14	291	3	1	0	30	30
Total Sept.	15	518	3	1	1	34	36
Difference.	1	227	0	0	1	4	5

WELLS COMPLETED

WELLS COUNTY

Nottingham—J. Williams, Ohio Oil 3, 5, 7 ..... abd
R. M. Eagle, Ohio Oil 1, 2, 3, 4, 5, 6, 7, 8 ..... abd
P. B. Alberson, Ohio Oil 4, 8, 9, 11... abd

Wells abandoned 15

JAY COUNTY

Bear Creek—Jeffries, General O. Prod. Corp. 2 5
Penn—Davis Bros., Manor, Stewart & Jones 10 ..... dry
A. Hetzler, C. F. Willson & Co. 1.... dry
Pike—Ritenour, Masters & Reese 11... 60
Rathbun, Masters, Bundy & Co. 5.... 70
Obryan Omar O. & G. 13..... 35

Wells completed 6
Production 170
Dry 2

ADAMS COUNTY

Wabash—B. E. Aspy, Aspy O. & G. 1.. 25
J. L. Aspy, Aspy O. & G. 1..... 20
William Aspy, Aspy O. & G. 1..... 10

Wells completed 3
Production 55

GRANT COUNTY

Pleasants—R. Hildermond, Nickelson & Co. 2 5

GIBSON COUNTY

Center—F. Wilderman, J. H. Young & Co. 1 60

SULLIVAN COUNTY

Turman—W. H. Huff, Fred Bays 1.... gas
T. Carrithers, Dugger Parties 1..... 1

Wells completed 2
Production 1
Gas 1

GREENE COUNTY

Stockport—Henry Belden, Indian Refg 1 dry

JAY COUNTY
Wells Drilling

Bear Creek—S. Saunders, Sub-Trenton Oil 1.
W. McMichaels, Smethers & Co. 4.
Pike—J. Redmond, Redmond & Co. 8. Moon, Moon & Co. 1. Kemp, Arnold & Co. 1. A. Ritenour, Masters & Reese 12. C. Rathbun, Masters, Bundy & Co. 6. Obryan, Bolyard & Co. 2.
Madison—Gillinger, J. E. Thompson & Co. 1. Iliff, Meusel & Co. 1. Kemp, Anderson & Co. 1. Kisler, John A. Bell 1.
South Noble—Cull, Willmott & Thompson 1. Wells drilling, 13.

ADAMS COUNTY
Wells Drilling

Blue Creek—C. J. Jones, Rockford Oil 2.

GRANT COUNTY
Wells Drilling

Pleasants—Maclehayne, Nickilson & Co. 4.

GIBSON COUNTY
Wells Drilling

Washington—C. Dawson, Lobowitz & Co. 2. Ira Seifers, Lynch & Co. 1.
Patoka—W. Yarger, Ohio Oil 1.
Center—W. VanMeter, Gray & Co. 1. E. Whiting, Murphy Oil 3.
White River—W. F. Chapman, Unknown 1. T. A. White, Perry Tichenour & Co. 1. Wells drilling, 7.

PIKE COUNTY
Wells Drilling

Madison—O. Dougen, H. E. Merriefield Trus. 1.
Monroe—S. Burnett, Consolidated O. & Dev. 1.
Clay—John Ford, Bement & Indian Refg. 1. Wells drilling, 3.

SULLIVAN COUNTY
Wells Drilling

Turman—Albert A. Poe, H. & S. O. & G. 6. T. Carrithers, Dugger Parties 2.
Gill—Cynthia Huff, Fred Bays 1.
Fairbanks—J. F. Hunnery, Charles Hollingsworth & Co. 1.
Jackson—L. Baldridge, Stewart & Co. 1. Wells drilling, 5.

W. KENTUCKY-TENN.

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wayne	1	0	1	0	0	10	10
Powell	1	10	0	0	0	8	8
Estill	0	0	0	0	0	6	6
Lee	5	13	0	0	0	3	3
Lawrence-Johnson	18	228	0	0	1	31	32
Johnson-Magoffin	25	223	0	0	0	38	38
Allen	26	166	14	0	0	13	13
Warren	18	201	4	2	0	24	24
Barren	6	46	1	0	0	20	20
Simpson	4	3	3	0	0	2	2
Cumberland-Monroe	14	660	8	0	0	28	28
Clinton	0	0	0	0	0	7	7
Russell	0	0	0	0	0	5	5
Owensboro District	8	57	1	0	0	16	16
Hopkins	3	89	0	0	0	3	3
Owsley	0	0	0	0	0	2	2
McLean	0	0	0	0	0	1	1

Metcalf	3	0	2	1	0	3	3
Hardin	1	0	1	0	0	2	2
Henderson ..	0	0	0	0	0	3	3
Greenup	0	0	0	0	0	1	1
Crittenden ..	0	0	0	0	0	1	1
Galloway ..	2	0	2	0	0	0	0
Union	1	5	0	0	0	0	0
Breathitt ...	0	0	0	0	0	1	1
Montgomery.	0	0	0	0	0	2	2
Rowan	0	0	0	0	0	1	1
Grayson	0	0	0	0	0	1	1
Elliott	0	0	0	0	0	3	3
Laurel	0	0	0	0	0	2	2
Martin	0	0	0	0	0	1	1
Muhlenburg..	1	0	1	0	0	0	0
Graves	1	0	1	0	0	0	0
Pike	0	0	0	0	0	1	1
Jefferson ...	1	0	1	0	0	0	0
Floyd	0	0	0	0	0	3	3
Marion	0	0	0	0	0	1	1
Knott	1	0	0	1	0	0	0
Meade	1	0	1	0	0	0	0
Tennessee ..	8	500	7	0	2	27	29
Mississippi ..	0	0	0	0	3	17	20
Alabama ...	0	0	0	0	0	11	11
Georgia	1	0	1	0	1	4	5
Florida	0	0	0	0	6	8	14
Total Oct.150	2,201	48	5	13	310	323	
Total Sept.151	4,185	41	11	1	320	321	
Difference. 1	1,984	7	6	12	10	2	

WAYNE COUNTY
Wells Completed

Monticello—Albert Phipps, Chas. Lockard 2 ..... dry

Wells completed 1
Production 0
Dry 1

POWELL COUNTY
Wells Completed

Slade—Robt. Boyd, Petroleum Exploration 7 10

Wells completed 1
Production 10
Gas 0
Dry 0

LEE COUNTY
Wells Completed

Beattyville—A. H. Warner, Lee Land Oil 16 3
A. H. Warner 17 3
A. H. Warner 18 3
A. H. Warner 19 2
A. H. Warner 20 2

Wells completed 5
Production 13
Dry 0
Gas 0

LAWRENCE-JOHNSON COUNTIES
Wells Completed

Louisa—J. C. Skaggs, Union G. & O. 2 15
Laura Skaggs, Union G. & O. 4 30
P. P. Holbrook, Union G. & O. 22.... 80
J. A. Dials, Union G. & O. 5 4
Anna Rose, Union G. & O. 4 2
L. Skaggs, Jr., Cumberland Pet. 5... 10
L. Skaggs, Jr., Cumberland Pet. 6.... 7
L. Skaggs, Sr., Cumberland Pet. 5.. 10
Nap Williams, Boston-S. W. Oil 2.. 10
Robt. Fyffe, Five Acre Oil 2 8
C. Osborn, Sr., W. J. Heeter & Co. 1.. 5
R. Wellman, Oscar Nelson 1 1
J. Ratcliff, Oscar Nelson 1 3
S. V. Skaggs, Figley, Day & Co. 3 ... 10
W. H. Kelly, Mid-South Oil 1..... 3
J. C. Gillam, Indian-Tex Pet. 6..... 15
S. V. Skaggs, Figley, Day & Co. 3 10
S. V. Skaggs, Figley, Day & Co. 4.. 10

Wells completed 18
Production 228
Dry 0
Gas 0

JOHNSON-MAGOFFIN COUNTIES
Wells Completed

Paintsville—Abe Caudill, Petroleum Exploration 31 10
D. Conley, R. G. Gillespie 6 10
D. Conley, R. G. Gillespie 7 10
D. Conley, R. G. Gillespie 8 10
D. Conley, R. G. Gillespie 9 10
S. Blanton 125, R. G. Gillespie 7 10
S. Blanton 125, R. G. Gillespie 8 10
S. & J. Blanton, R. G. Gillespie 7.... 10
J. Patrick, Burning Fork Oil 6.... 10
F. Conley 200, S. D. Wheeler Trst. 9 5
H. Cantrell E-40, Atlantic O. Prod. 8 10
H. Cantrell E-40, Atlantic O. Prod. 9 10
Thos. Meade, Meade & Stafford 6 1
J. W. Lemasters, Model Oil 14..... 8
M. Blanton, Swiss O. Corp. 26..... 8
M. Blanton, Swiss O. Corp. 27 8
M. Blanton, Swiss O. Corp. 28..... 6
Roark, Kentucky Counties Oil 4 10
Harry Adams, Oliver Jenkins 1..... 5
Salyers Hrs., Oliver Jenkins 1 2
I. Williams, T. J. Tonkin & Co. 4.. 10
S. Blanton, Mid-South Oil 1 5
W. E. Patrick, Bed Rock Oil 1 15
Wm. Salyers, Carter Oil 1 20
Frank Conley 66, Wheeler, Patton & Co. 11 10

Wells completed 25
Production 225
Dry 0
Gas 0

ALLEN COUNTY
Wells Completed

Scottsville—W. L. Motley No. 2, Turner & English 5 3
T. L. Beam, Payne & Pickett 2 .... dry
Gibson, Good & Panell 1 ..... dry
W. Clark, Simpson & Stentz 1 ..... dry
B. Irwin, Hall & Co. 13 5
T. K. Brown, Toronto Synd. 19 12
P. Gibson, Sheridan & Co. 2 20
P. Gibson, Sheridan & Co. 3 ..... dry
F. Gibson No. 1, Sheridan & Co. 15.. dry
F. Gibson No. 2, Sheridan & Co. 2.. dry
J. M. Pearson, Hickory Hill Oil 3.... dry
H. Johnson, O. G. Johnson 8..... dry
F. Calvert, Brendall & Co. 11 7
F. Gibson, M. B. W. Synd. 6 ..... dry
Burton, Burton Bros. 7 8
Pat Edmunds, C. A. Phelps 19 ..... dry
M. B. Chism, Polk Caldwell 5 ..... dry
Wilson, R. E. Wilson 2 10
Wilson, R. E. Wilson 3 10
S. Hinton, Karns & Co. 1 ..... dry
J. W. Frost, White Plains Oil 4 ..... dry
T. Buchanan, White Plains Oil 16.. 4
Kerley, J. H. Neil & Son 2 72
Bethel Church, Ray & Co. 2 3
Halifax, Dixon & Co. 1 ..... dry
Pearson, West Penn O. Synd. 9 12

Wells completed 28
Production 166
Dry 14
Gas 0

WARREN COUNTY

Bowling Green—Biddle, Cadet O. & G. 20 25
Conley, Cadet O. & G. 4 ..... dry
Lena Doyle, E. M. Treat & Co. 3 25
Keller, Ohio Fuel Oil 2 6
Garrett, Ohio Fuel Oil 4 12
W. A. Gott, Ohio Fuel Oil 13 2
Hogan, Barnett & Co. 1 ..... dry
Hill, Farmers O. & G. 1 ..... dry
Woodard, Reed & Co. 1 ..... gas
J. W. Caldwell, Roy Hogan 1 ..... gas
T. Upton, J. L. Harper & Co. 4 14
Bryant 16, Flannagan & Co. 2 40
A. Colburn, M. C. Mullen 5 12
B. Stiles, Gale Oil 2 ..... dry
W. A. Gott, Plantation Cons. Oil 6.. 10
Dr. Francis, G. C. Foster 1 40
Young, Makeever Bros. 3 12
W. A. Bryant, Phillips & Co. 1 3

Wells completed 18
Production 201
Dry 4
Gas 2

BARREN COUNTY

Glasgow—K. Nichols, Smith & Son 2 .. 4
Button, Lew Emery, Jr., & Son 54.. 3
Adams, White & Moore 3 ..... dry
Widow Ritchie, Warder, Sampson & Co. 1 22
Taylor, Bryner Oil 3 4
Berry, Norris Bros. & Sampson 5.... 13

Wells completed 6
Production 46
Dry 1
Gas 0

SIMPSON COUNTY

Franklin—Pugh, Western Engineering Dev. 12 ..... dry
Ellis, W. H. Daniels & Co. 1 ..... dry
C. F. Butts, Liggett & Dixon 4 3
A. Slate, J. H. McClurkin 1 ..... dry

Wells completed 4
Production 3
Dry 3
Gas 0

CUMBERLAND-MONROE COUNTIES
Wells Completed

Burkesville—Sam Riddle, E. M. Treat & Co. 1 200
Sam Brenton, Martsolf Fuel Prod. 1 10
T. Keen, W. S. Raydure 5 ..... dry
Sam Smith, W. S. Raydure 1 ..... dry
J. M. Riddle, W. S. Raydure 2..... 160
J. M. Riddle, Hook, Ross & Wise 3.. dry
Poindexter, Penderson & Bentley 1.. dry
Kin Crawford, Fred Pederson 2 150
L. Chapman, Louisville G. & Electric 1 ..... dry
L. Coffee, Huntington-Okla. Oil 2... dry
A. Huddleston, Morris Pet. 5 100
Mary Anderson, W. A. Hinson 1..... dry
Mary Anderson, Williams & Richardson 1 ..... dry
A. Huddleston, Less Combest & Co. 2 100

Wells completed 14
Production 660
Dry 5
Gas 0

OWENSBORO DISTRICT

Owensboro—Bayse, Keiser & Johnson 1 dry
W. C. Payne, Kentucky Oil 1..... 5
Smith 120, W. H. Damron & Co. 1.... 3
J. Morrison, Newton Oil 3 30
Miller, Damron Bros. 2 15
V. Miller, C. E. Daugherty 1 10
Howe, Leeper Oil 1 3
C. T. Johnson, Book & McDonough 2 1

Wells completed 8
Production 57
Dry 1
Gas 0

HOPKINS COUNTY

Madisonville—Holleman, Cooper Flash Oil 3 2
Holleman, Cooper Flash Oil 4 30
Holleman, Cooper Flash Oil 5 57

Wells completed 3
Production 89
Dry 0
Gas 0

METCALF COUNTY

Edmonton—J. W. Galloway, Sinning & Border 1, 2 ..... dry
Anderson, Knob Lick Oil 3 ..... gas

Wells completed 3
Production 6
Dry 2
Gas 1

CALLOWAY COUNTY

Murray—Davenport Oil 1 ..... dry
McMurtrie & Co. 1 ..... dry

Wells completed 2
Production 0
Dry 2
Gas 0

UNION COUNTY

Morganfield—Proctor, Ayres & Co. 1.. 5

HARDIN COUNTY

Elizabethtown—Russell, Smith & Co. 2 dry

MUHLENBURG COUNTY

Penrod—Wood Oil 3 ..... dry

GRAVES COUNTY

Graves—Unknown 1 ..... dry

JEFFERSON COUNTY

Underwood—Pigeon Roost Oil 2..... dry

KNOTT COUNTY

Hindman—Jack Shepherd, Garver & Davis 1 ..... gas

MEADE COUNTY

Brandenberg—Tindall, Louisville G. & Electric 1 ..... gas

TENNESSEE
CLAY COUNTY

Celina—Overstreet, Bushaw & Co. 1 .. dry
E. S. Dalton, Spayne & Co. 2 ..... dry
Marcum, New York Parties 2 ..... dry
L. Bilbrey, Biggerstaff & Durham 2 dry
A. Short, Powell Oil 2 ..... dry

Wells completed 5
Production 0
Gas 0
Dry 5

MARSHALL COUNTY

Lewisburg—Haywood, Beckley O. & G. 1 ..... dry

WARREN COUNTY

McMinnville—Overhalt, Kentucky-Tennessee O. & G. 1 ..... dry

PICKETT COUNTY

Byrdstown—N. W. Part County, Oklahoma Parties 1 500

GEORGIA
WHEELER COUNTY

McRae—Wilcox Dixie Oil 1 ..... dry

WAYNE COUNTY
Wells Drilling

Monticello—Coffey Heirs, Bell Bros. 2.
G. D. Sanders, Barr & Griffin 5.
L. N. Morrow, Beaver Pet. 4.
D. C. Denney, C. M. Work 5.
A. W. Campbell, Clark O. & G. 5.
Francis Baker, Dr. Doolittle & Co. 1.
Bennett Heirs, Superior Oil Corp. 28.
Tom Stinson, J. H. Johnson & Co. 1.
Ira Gregory, C. E. Daugherty & Co. 2.
John Koontz, Carter & Bertram 2.
Wells drilling, 10.

POWELL COUNTY

Slade—Virdin, Thirteen Oil 4.
A. Williams, Hupp & Duff 2.
Mitch Neal, Hupp & Duff 14.
Caz Mullins, Hupp & Duff 4.
Sam Hall, Powell Oil 8.
Sam Baker, Heine Oil 1.
Townsend, E. E. Edwards 2.
E. D. Curtis, Knight & Biemer 1.
Wells drilling, 8.

ESTILL COUNTY
Wells Drilling

Irvine—Sam Miller, Smith, Clark & Co. 2.
Art Campbell, Superior Oil Corp. 2.
Millard Smith, Raydure & Comos 2.
Lula Law, Amsler & Downs 10.
Joe Frazier, Swiss O. Corp. 2.
Paul Rogers, Wood Oil 1.
Wells drilling, 6.

LEE COUNTY
Wells Drilling

Beattyville—J. D. Smythe, Superior Oil Corp. 15.
Lucky Watkins, J. H. Sallee 8.
J. T. Hare, The Petroleum Co. 4.
Wells drilling, 3.

LAWRENCE-JOHNSON COUNTIES
Rigs

Louisa—Nap Williams, Boston-S. W. Oil 3.
Wells Drilling

Louisa—J. C. Gillam No. 2, Union G. & O. 2.
L. V. Skaggs, Union G. & O. 3.
Sena Skaggs, Union G. & O. 1.
P. P. Holbrook, Union G. & O. 18, 23.
C. H. Fyffe, Union G. & O. 1.
Levisa Skaggs, Union G. & O. 13, 14.
Andrew Skaggs, Union G. & O. 12.
Jas. H. Skaggs, Union G. & O. 18.
L. H. Skaggs, Union G. & O. 4.
J. J. Gambill, Union G. & O. 28.
Proctor Sparks, Union G. & O. Co. 18.
J. H. Holbrook, Union G. & O. Co. 9.
Harrison Bailey, Union G. & O. Co. 3.
Wm. Boggs, Cumberland Pet. 4.
Sena Hamilton, Cumberland Pet. 4.
Levi Skaggs, Jr., Cumberland Pet. 7.
Leo. Skaggs, Sr., Cumberland Pet. 6.
R. M. Sparks, Boston-S. W. Oil 21.
M. Bailey, Freudenberg & Co. 2.
C. Williams, J. E. McIntyre & Co. 6.
Milt Williams, Central Kentucky Gas 4.
W. L. Gillam, Indian-Tex. Pet. 4.
J. C. Gillam, Indian-Tex. Pet. 3.
Geo. Gillam No. 2, Indian-Tex. Pet. 5.
Matilda Mee, Carter Oil 2.
Robt. Fyffe, Five Acres Oil 3.
W. H. Kelly, Mid-South Oil 2.
S. V. Skaggs, Figley, Day & Co. 5.
Ira Lester, Fred Stone & Co. 3.
Rigs, 1; wells drilling, 31; total, 32.

JOHNSON-MAGOFFIN COUNTIES
Wells Drilling

Paintsville—Milt Wheeler, Carter Oil 9.
Wm. Salyer, Carter Oil 2.
W. S. Adams, Petroleum Explo. 21.
Kelly Adams, Petroleum Explo. 3.
D. J. Vanderpool, Petroleum Explo. 1.
F. M. Moore, R. G. Gillespie 5.
J. M. Kimbleton, R. G. Gillespie 10.
Tollie Conley, R. G. Gillespie 3.
S. & J. Blanton, R. G. Gillespie 8.
Darius Conley, R. G. Gillespie 10.
C. Roark, Dave Browning & Co. 3.
M. E. Coffey, Superior Oil 2.
A. A. Almy, Cumberland Pet. 5.
Green Rice, Southwestern Pet. 32.
J. Cochran, Little Paint Oil 2.
L. M. Kimbleton, Little Paint Oil 2.
Elam Powers, Fields & Magee 1.
Sam Blanton, Palmer Bros. 8.
Gil Blanton, Meade & Stafford 2.
W. M. Fulkerson, Orrell & Thompson 1.
Mary Franklin, George & Touma 4.
S. McKenzie, Coast Oil 5.
Manford Blanton, Structure Oil 23.
Harman, Oliver Jenkins 6.
J. H. Arnett, Bed Rock Oil 13.
Bishop Patrick, Swiss Oil Corp. 7.
Bud Gullett, Jas J. Parker 1.
Jos. Wright, Jas. J. Parker 1.
H. C. Conley, Hudson & Collins 13.
M. S. Ross, Carroll O. & G. 1.
H. Cantrell 40, Atlantic Oil Prod. 6.
H. Cantrell E-40, Atlantic Oil Prod. 10.
Frank Conley 200, S. D. Wheeler Trust 10.
Frank Conley 66, Wheeler, Patton & Co. 12.
Raleigh Salyer No. 2, Burning Fork Oil Syndicate 1.
Cleveland Salyer, Bed Rock Oil 1.
A. J. Tackett, C. W. Wheeler 7, 8.
Wells drilling, 38.

ALLEN COUNTY
Wells Drilling

Scottsville—Morehead, 66 Oil Synd. 7.
Motley, Thompson & Co. 9.
Grubbs, Gayman & Co. 7.
W. H. Hevington, Dye Bros. 1.
Tracey, W. B. Reed 2.
S. H. Dennis, Friends Oil 2.
McFishburn, Allen County Oil 14.
T. Williams, F. J. Chipman 1.
G. C. Carter, Fishburn Oil 1.
Ayres, Kiser & Co. 12.
F. Gibson, M. B. W. Synd. 7.
F. Gibson, Sheridan & Co. 16, 17.
F. Gibson No. 2, Sheridan & Co. 1.
Wells drilling, 13.

WARREN COUNTY
Wells Drilling

Bowling Green—Biddle, Cadet O. & G. 21, 22.
J. Hobson, M. B. Williams 3.
M. Reeves 200, Marsolf Prod. 2.
J. Isabell, Wood Oil 10.
Elkins, Chicago Interests 1.
Gillespie, Gillespie Oil 4.
J. Hudson, Beaver Pet. 3.
J. Kelly, Mountain State Oil 9.
Sid Petty, Leonard & Co. 7.
G. Potter, Tischner & Co. 2.
Willoughby Lane, Nottulyn Oil 3.
W. A. Gott, Plantation Cons. Oil 7.
Simmons, Plantation Cons. Oil 2.
Price-Hall, Ruby Cons. Oil 3.
Davison, W. F. Coast Oil 4.
McLemore, C. L. Turner 3.
G. Smith, Watts & Co. 1.
G. Price, Bowline Oil 2.
A. Shields, Brannon & Stewart 2.
Penner, O. J. Daugherty 3.
Watkins, G. W. Pyle 1.
T. L. Upton, J. L. Harper & Co. 5.
Dr. Francis, G. C. Foster & Co. 2.
Wells drilling, 24.

BARREN COUNTY
Wells Drilling

Glasgow—Smith, Smith-Oliver O. & G. 12, 13.
Childress, Maxey Kopel 3.
Hearston, Lew Emery, Jr. & Son 5, 6.
Truble, Houchins Oil 3.
Mansfield, Houchins Leasehold 1.
L. Howard, Elem O. & G. 1.
Bybee, Cave City O. & G. 3.
Lyons, Cave City O. & G. 1.
H. Myers, Trigg & Scott 1.
L. Summers, South St. Paul O. & G. 4.
Simmers, Horace Combs 1.
Vincent, Sumner Valley O. & G. 3.
Wood, Warren-Daniells Oil 2.
Jordon, Shriver & Co. 1.
W. E. Steffey, Unknown 1.
Preston, Federal Oil 3.
Adams, White & Moore 4.
Unknown, White & Moore 1.
Wells drilling, 20.

SIMPSON COUNTY
Wells Drilling

Franklin—Holland, Phelps & Co. 3.
W. Powell, J. H. McClurkin 1.
Wells drilling, 2.

CUMBERLAND-MUNROE COUNTIES
Wells Drilling

Burkesville—L. C. Butler, Williams & Richardson 1.
L. Smith, Ridenour & Stewart 1.
W. Bybee, Adams & Eggle 1.
P. Huddleston, W. S. Raydure 1.
C. Gross, Seaboard Oil 1.
R. E. Williams, Kanawha Oil 1.
W. B. Arms, Chenault & Williams 1.
R. G. Gilbert, Southern O. & Refg. 4.
Turn Smith, Reynolds & Bushaw 1.
Peter Coe, Bushaw & Co. 1.
A. Williams, C. P. Taneyhill 1.
A. McMillan, Hensgen & Bentley 1.
J. R. Poindexter, Young Oil 1.
C. Chapman, J. J. White & Co. 1.
M. Keith, Carroll O. & G. 1.
East Fork Creek, Turner & Co. 1.
Humble, Star Oil 1.
J. C. Hume, Judio Oil 3.
Smith, Bushaw & Co. 2.
J. I. Scotts, Lynch & Co. 1.
J. B. Riddle, Hook, Ross & Wise 3.
S. Blythe, South Kentucky Oil 1.
Elbow Bend, Holmes & Co. 1.
S. Riddle, Hook, Ross & Wise 1.
Ray, Louisville G. & Electric 1.
P. Smith, E. M. Treat & Co. 1.
A. Huddleston, Lee Combest & Co. 3.
A. Huddleston, Morris Pet. 6.
Wells drilling, 28.

CLINTON COUNTY
Wells Drilling

Albany—N. Flowers, Beech Bottom O. & G. 1.
J. Edwards, Beech Bottom O. & G. 1.
H. Hopkins, C. E. Smith & Co. 1.
Irwin, Mutual O. & Refg. 1.
T. C. Koger, C. E. Smith & Co. 1.
James, J. H. Pigg & Co. 1.
Wallace, Chenault Williams 1.
Wells drilling, 7.

RUSSELL COUNTY
Wells Drilling

Creelsboro—J. P. Dunbar, G. W. Guthrie 1.
Coffee, Carnahan Oil 15.
L. Miller, Leslie Coombs 1.
E. Mann, Weller & Co. 1.
Campbell, McMeade Oil 4.
Wells drilling, 5.

OWENSBORO DISTRICT
Wells Drilling

Owensboro—E. Barlow Leeper Oil 1.
Curry, Archer & Co. 2.
D. Spurrier, Newton Oil 1.
L. Payne, Newton Oil 2.
E. Brickett, Newton Oil 1.
Ed. Baize, Thompson & Co. 2.
Payne 58-A, B. Thompson 1.
Vogiers, Newton Oil & Daugherty 2.
C. Payne, Randolph & Co. 1.
Brown, Newman Oil 1.
Walnut Grove School, Leeper Oil 1.
Unknown, Wood Oil 1.
J. Morrison, Newton Oil & Daugherty 4.
O. T. Burdette, White & Co. 1.
At Narrows, McCoombs Prod. & Refg. 1.
Taylor, Chicago Pet. Synd. 1.
Wells drilling, 16.

HOPKINS COUNTY
Wells Drilling

Madisonville—Hollerman, Cooper Flash Oil 6.
Bishop, Wm. Redman 1.
Slaughterville, B. S. Kelly 1.
Wells drilling, 3.

OWSLEY COUNTY
Wells Drilling

Boonville—D. C. Mannius, Petroleum Explo. 1.

Andy Combs, Combs Bros. & Co. 4.
Wells drilling, 2.

McLEAN COUNTY
Wells Drilling
Beech Grove—G. Cline, Petroleum Extraction 1.

METCALF COUNTY
Wells Drilling
Edmonton—Dry Fork, Pepley & Co. 1.
Unknown, Cave City O. & G. 1.
Thompson, Unknown 1.
Wells drilling, 3.

HENDERSON COUNTY
Wells Drilling
Henderson—Nau, H. Y. Clay & Co. 1.
J. Epperson, Railroad Oil 1.
Graham, Penn-Indiana Oil 1.
Wells drilling, 3.

GREENUP COUNTY
Wells Drilling
Greenup—Lee Evans, Petroleum Explo. 1.

CRITTENDEN COUNTY
Wells Drilling
Tolma—Sam C. Hall & Co. 1.

BREATHITT COUNTY
Wells Drilling
Jackson—S. H. Hurst, Petroleum Explo. 4.

MONTGOMERY COUNTY
Wells Drilling
Mt. Sterling—J. R. Magason, Hinkston Oil 1.
Faulkner, Hinkston Oil 1.
Wells drilling, 2.

ROWAN COUNTY
Wells Drilling
Morehead—Craney Creek, Patton O. & G. 1.

GRAYSON COUNTY
Wells Drilling
Litchfield—Cincinnati Cribbage, W. B. Lyles 1.

ELLIOTT COUNTY
Wells Drilling
Sandy Hook—Mildred Wagner, Superior Oil 1.
George Kayzee, T. J. Evans 2.
Ves Peters, Campbell & Wheeler 2.
Wells drilling, 3.

LAUREL COUNTY
Wells Drilling
London—Bernstadt, Common O. & G. 2.
Mrs. L. Hubbard, Piney O. & G. 1.
Wells drilling, 2.

HARDIN COUNTY
Wells Drilling
Elizabethown—Lew J. Emery, Jr., & Son 1.
Davis & Co. 1.
Wells drilling, 2.

PIKE COUNTY
Wells Drilling
Pikeville—Pond Creek Coal, A. J. Dalton 1.

FLOYD COUNTY
Wells Drilling
Hueyville—C. D. Patrick, Cross Bros. 1.
Ky. R. Coal, Brown & Harmon 1.
Glogora Coal, Pennegrade O. & G. 1.
Wells drilling, 3.

MARION COUNTY
Wells Drilling
Lebanon—Near Calvary, Kokomo Drg. 1.

MARTIN COUNTY
Wells Drilling
Ines—Simpson, Huntington, W. Va. Parties 3.

TENNESSEE
CLAY COUNTY
Wells Drilling
Celina—L. Bibery, Biggerstaff & Durham 1, 3.
H. Lyons, Palmer & Bushong 1.
Overstreet, Bushaw & Co. 2.
Williams, DeFoe & Co. 2.
Kyle, Union Oil Trust 1.
Widow Hargrove, M. N. Sauls 1.
Marcum, New York Parties 3.
Arch Short, Powell Oil 3.
Wells drilling, 9.

MURRAY COUNTY
Wells Drilling
Hampshire—McClannahan, Dr. Dorem 1.

HARDEMAN COUNTY
Wells Drilling
Bolivar—Brown Spgs., Spring Valley Dev. 1.

JACKSON COUNTY
Wells Drilling
Jackson—H. H. Murchison, Jackson-Tenn. Oil 1.

GRUNDY COUNTY
Wells Drilling
Altamont-Mount Regal, Andrews-Barbee Co. 1.

FAYETTE COUNTY
Wells Drilling
Sommerville—Strickland & Co. 1.

LAWRENCE COUNTY
Wells Drilling
Lawrenceburg—Stribling, Moran & Co. 3.

SHELBY COUNTY
Wells Drilling
Arlington—Garrett, Arlington Parties 1.

WARREN COUNTY
Wells Drilling
McMinnville—Powell, Riverside O. & G. 1.
Unknown, Whitner & Co. 1.
Foster, Ky-Tenn O. & G. 1.
Wells drilling, 3.

SUMNER COUNTY
Wells Drilling
Gallatine—Stewart, McGhee & Co. 2.
Unknown, Gillespie Oil 1.
Harris, Pennsylvania Parties 1.
Dutch Creek, A. M. Griffin 1, 2.
Dutch Creek No. 2, A. M. Griffin 1.
Wells drilling, 6.

VAN BUREN COUNTY
Wells Drilling
Spencer—S. W. Corner, Johnson & Co. 1.

HAMILTON COUNTY
Rigs
Chattanooga—Near Daisy, Dryden & Co. 1.
Wells Drilling
Chattanooga—Bellvoar, Parks & Co. 1.
Rigs, 1; wells drilling, 1; total, 2.

RHEA COUNTY
Rigs
Dayton—Near Dayton, Unknown 3.

BENTON COUNTY
Wells Drilling
Camden—Near Eva, Benton O. & G. 1.

PICKETT COUNTY
Wells Drilling
Byrdstown—N. W. Part County, Oklahoma Parties 2.

MISSISSIPPI
TISHOMINGO COUNTY
Wells Drilling
Iuka—Southard, Mississippi O. & Refg. 1.

CALHOUN COUNTY
Wells Drilling
Calhoun—Northeast Oil 1.

HINDS COUNTY
Wells Drilling
Hinds—Elton farm, Benninger & Beach 2.

JACKSON COUNTY
Wells Drilling
Utica—Jackson Oil 1.

LINCOLN COUNTY
Wells Drilling
Hartman—Anderson Drilling 1.

WASHINGTON COUNTY
Wells Drilling
Granville—Williams, Alhambra Oil 1.

LAFAYETTE COUNTY
Wells Drilling
Oxford—Kinzey O. & G. 1.

PIKE COUNTY
Rigs
Cupit—Tulsa Parties 1.
Wells Drilling
Cupit—Gulf Drilling 1.
Rigs, 1; wells drilling, 1; total, 2

JEFFERSON COUNTY
Wells Drilling
Truly—Manhattan-Tex Oil 2.

CHICKASAW COUNTY
Wells Drilling
Hamilton—Harley Dev. 1.

UNION COUNTY
Rigs
Unknown—Maynard Wells Oil 2.
Wells Drilling
Unknown—Maynard Wells Oil 1.
Rigs, 1; wells drilling, 1; total, 2.

TALLAHATCHIE COUNTY
Wells Drilling
Charleston—Charleston Oil 2.

COPIAH COUNTY
Wells Drilling
Section 15-13-3—White, B. H. White 2.
Crystal Springs—Marshall Oil 1.
Wells drilling, 2.

LOWNDES COUNTY
Wells Drilling
Unknown—Billups, Anderson Drilling 1.

ITAWAMBA COUNTY
Wells Drilling
Fulton—Missouri Capital 1.

CLAY COUNTY
Rigs
West Point—Gulf Development 1.

FRANKLIN COUNTY
Wells Drilling
Jackson—Fletchering & Co. 1.

SUMPTER COUNTY
Wells Drilling
Coatopa—Sam Kendall & Co. 1.

MORGAN COUNTY
Wells Drilling
Decatur—Albany-Decatur O. & G. 1.

BALDWIN COUNTY
Wells Drilling
Bay Nette—Stolle & Co. 1.

HALE COUNTY
Wells Drilling
Greensburg—Hale Oil 1.

SHELBY COUNTY
Wells Drilling
Columbiana—Cocksey Oil 1.

WILCOX COUNTY
Wells Drilling
Selma—Blue Belle Oil 1.

CENTER PART STATE
Wells Drilling
Columbia—Inter Coastal Oil 2.
Salipta—Keoughan Oil 2.
Wells drilling, 2.

MADISON COUNTY
Wells Drilling
Huntsville—P. J. Mahoney 1.

LAWRENCE COUNTY
Wells Drilling
Moulton—Tulsa Parties 1.

COLBERT COUNTY
Wells Drilling
Sheffield—P. H. Ligon, Spring Valley Oil 1.

GEORGIA
PULASKI COUNTY
Rigs
Hawkensville—Florida-Georgia Cons. Oil 1.

JEFF DAVIS COUNTY
Wells Drilling
Hazlehurst—Mid Georgia O. & G. 1.

TELFAIR COUNTY
Wells Drilling
Scotland—Telfair Oil 1.

BURKE COUNTY
Wells Drilling
Green Cut—Three Creeks Oil 1.

NORTHERN GEORGIA
Wells Drilling
Near Dalton—Richardson & Co. 1.

LOUISIANA
LEE COUNTY
Wells Drilling
Section 10-45-26—Florida Exploration 1.
Section 21-44-26—T. M. Drilling Synd. 1.
Wells drilling, 2.

HILLSBORO COUNTY
Wells Drilling
Section 8-32-20—Wimauma Oil 1.

PINELLAS COUNTY
Wells Drilling
Section 18-28-17—Hill O. & G. 1.

POLK COUNTY
Rigs
Section 9-25-25—Isaac Van Horn & Co. 1.
Wells Drilling
Section 25-27-24—Polk O. & G. 1.
Rigs, 1; wells drilling, 1; total, 2.

DUVAL COUNTY
Wells Drilling
Section 12-3-26—East Coast Oil 1.

LEON COUNTY
Wells Drilling
Section 15-28-1e—West Florida O. & G. 1.

COLUMBIA COUNTY
Wells Drilling
Section 22-2-16—Suwanee O. & Dev. 1.

DADE COUNTY
Rigs
Section 21-53-41—Consolidated Oil 1.
Section 17-54-41—House, Marvin & Harris 1.
Rigs, 2.

ALACHUA COUNTY
Rigs
Section 13-9-19—Pruit-Gobert Florida Oil Int. 1.

GLADES COUNTY
Rigs
Section 2-4-30—Brewton Oil & Land 1.

GULF COAST

MISCELLANEOUS

ANGELINA COUNTY
Rigs
White, H. C. Jennings 3.
Lufkin, Kansas City Oil 1.
Thomas, Baker-Henderson 1.
Henderson, Pike et al 2.
Drilling
Odum, Kansas City Oil 1 s. d. 660 ft.
Arras, O. W. Young, 1 s. d. 850 ft.
Ellison, Pike et al 1.
Scurlock, H. H. Hyder 1.

AUSTIN COUNTY
Drilling
Hess, La Marque Oil 1.

ATASCOSA COUNTY
Rigs
Fuller, Witherspoon Oil 1.
Tiepe, Ennis & Cowden 1.
Drilling
Peell, Atascosa Oil 1, s. d.
Tom, De Langer-Elser Co. 2, s. d.

BASTROP COUNTY
Rigs
Valenta, Triangle Oil 2.
Drilling
Smith, Mid-West Texas Oil 1.
———, Elgin Oil Syndicate 1.

BREWSTER COUNTY
Drilling
Kokernot, Arco Dev. 1, s. d.
Finnel, Nine Points Oil 1, s. d.
Kokernot, Brewster Oil 1, s. d.

BRAZORIA COUNTY
Rigs
Campbell, The Texas Co. 1.
Drilling
Breen, Transcontinental Oil 1, 2, s. d.
Brazoria, Chester Oil 1, s. d.
Boggs, Quick Dev. Co. 1.

BRAZOS COUNTY
Drilling
Connitello, Brazos-Bryan Oil Synd. 1, s. d.

CHAMBERS COUNTY
Rigs
Anahuac, Houston Oil 1.

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Drilling
Wallaceville, Hindman & Keeble 2.

COLORADO COUNTY
Drilling
Kaiser, Columbus-Bernard Oil 1 s. d.

BEXAR COUNTY
Rigs
Hamilton, Gas Ridge Oil 1.
Garzell, Transcontinental Oil 1.

CROCKETT COUNTY
Rigs
University Land, Enders-Smith Co. 1.
Shannon, Crockett Drilling Co. 2.
Drilling
Shannon, Crockett Drilling Co. 1
Masie, Crockett Drilling Co. 1.

CULBERTSON COUNTY
Drilling
Sayles, J. D. Wesner 1.
Jones, T. W. Owens 2.
Johnston, Consolidated Sulphur 1, s. d.
Sayles, G. W. Gossert 1.

FORT BEND COUNTY
Rigs
———, Gulf Dev. Co. 3.
Drilling
Thompson, Galveston Dev. Co. 1.
Hellmuth, Iona Oil 1.
Bryan, Iona Oil 1, s. d.
Booth, Booth Oil & Gas 1, s. d.

EL PASO COUNTY
Drilling
Fee, Burns & Wright, 4, 800 ft., s. d.

GALVESTON COUNTY
Rigs
High Island-Cade, Sun Oil Co. 7.
Drilling
High Island, Cade, Sun Oil Co. 5, 6.
High Island, Smith, Yount-Lee Oil 1, s. d.
High Island, Gilbert Oil 1.
High Island Dev. 1 s. d.
Mott, Magnolia Pet. 1 s. d.
Friendswood, Ken-La-Tex Oil 1, s. d.
Johnson, Armstrong & Armstrong 1 s. d.

GONZALES COUNTY
Drilling
Stephens, J. K. Hughes 3.
Menely, W. O. Wood 1.

GUADALUPE COUNTY
Rigs
Imhoff, M. Burman 1.
McKean, United North & South Oil 1.
Nichols, United North & South Oil 1.
Imhoff, Magnolia Pet. 1.
Drilling
Bear, West. Prod. 1.
Blanks, Plateau Oil 1, 1,750.
Engelke, United N. & S. Oil 1.
Shanklin, United N. & S. Oil 1,
Manford, United N. & S. Oil 1.
Tiemann, Tiemann Oil 1.
Schuenman, Copus Oil 1.
McKean, United N. & S. Oil Co. 2.
Imhoff, Herman & Son.
Helm, Bowen et al.

GRIMES COUNTY
Drilling
Near Carlos, Brazos Oil 1.

HARRIS COUNTY
Rigs
Hockley-Warren, Texas Exploration 16.
Drilling
Hockley-Warren, Texas Exploration, 14, 15.
Reed, F. N. Bullock et al 2, s. d.

HOUSTON COUNTY
Drilling
Kazbury, C. A. Geberman 1.
Driskell, La-Tex Oil 1, s. d.

JEFFERSON COUNTY
Rigs
Big Hill, Pipkin, Houston Oil 7.
Drilling
Big Hill, Pipkin, Houston Oil 5, 6.
Staiti, Houston Oil 1.
Big Hill, Gulf Prod. 1.
Westberry, Pine Island Oil 1, s. d.
Cheek, Amalgamated Oil 1, s. d. 3450.

JACKSON COUNTY
Rigs
Salinas, Vanderbilt Pet. 1.

JIM HOGG COUNTY
Drilling
Holbein, Miracle Oil 1, s. d.
Holbein, Las Animas Oil 2, 3, s. d.
Holbein, Elm Oil & Gas 1, s. d.
———, Miama-Baldin Oil 1, s. d.
Davenport, Revere Oil 1, s. d.
Deering, Diamond S Oil 1.
Trussle, Memphis-Zapata Oil 2, s. d.
Tyson, Homer-Tyson Oil 1, s. d.
Holbein, Weber Oil 1, s. d.
Hannant, Freson Oil 1, s. d.
East Ranch, Humble Oil & Refg. 1.

DUVAL COUNTY
Drilling
Singer, Humble Oil & Refg. 3.
Walsh, Humble Oil & Refg. 2, s. d.
Schallbert, National Oil 5, s. d.
Dinn, Queen Oil 1, s. d.
Mesquite, Mesquite Oil 1, s. d.
Canales, Florey & Gibons 1.

KLEBERG COUNTY
Drilling
Kissman, Humble Oil & Refg. 1, s. d.; 2.
Rosse, Humble Oil & Refg. 1.

KARNES COUNTY
Drilling
DeWees.
———, Beale & Co. 1.

CALDWELL COUNTY
Drilling
Ott, Green et al 1.
Dunlap, Dunlap & Co. 1.
Davis, Kittlet et al 1.

LIBERTY COUNTY
Drilling
Peeler, Quick Dev. 1.
———, South Dayton Oil 1.

FAYETTE COUNTY
Rigs
Muldoon, John A. Kerris 1.

LIVE OAK COUNTY
Rigs
Brown, Grubstake Invest Co. 1.
Reagan, Lobo Oil 6.
Lake, Grubstake Investment, 4, 5
Drilling
Lark, Grubstake Inv. 3.
Nichols, Grubstake Inv. 2.
Reagan, Lobo Oil 5.
George West, The Texas Co. 1.
Cartwright, Houston Oil 3.
Callihan, Dullihan et al 1.
Cox, Grubstake Inv. 1 s. d.

MATAGORDA COUNTY
Drilling
Shepherds Mott, Commonwealth Oil 3.

MONTGOMERY COUNTY
Drilling
Shawyer, Montgomery County Oil 1.
Cude, Metropolitan Oil 1.
Knox, Melos Oil 1 s. d.
Smith, Wilburton Oil 2, s. d.
Madley, San Jacinto River Oil 1, s. d.
McDermott, Tammins Prod. 1 s. d

MAVERICK COUNTY
Rigs
Fee, Eagle Pass Oil 2.
Drilling
Fee, Eagle Pass Oil 1.
Bennett, Trans-Pecos Oil 1.
Johnson, H. L. Troy 1, s. d.
Turney, Oregon-Texas Oil 1, s. d.
Odem, Southern States Lease 1.

PRESIDIO COUNTY
Drilling
Tole, Claude Byler 1 s. d.

REAGAN COUNTY
Rigs
Santa Rita, Texon Land Dev. 5.
University, Transcontinental Oil 1.
Drilling
Santa Rita, Texon Land Dev. 3, 4.

REEVES COUNTY
Drilling
Burachard, Tatum Lease Synd. 1, s. d.
Kerschenum, W. S. Troy 1, s. d.
Pecos Valley, Texas Drg. & Dev. 1, s. d.
Findley, Bell-Reeves Co. 1, s. d.
Johnson, Pico Pet. 1, s. d.
T. P. Land, Hawkeye-Pecos Oil 1, s. d.
Oates, Los Pecos Oil 1, s. d.
Parker, Johnson-Hancock Co. 1, s. d.

SAN PATRICIO COUNTY
Drilling
Rachal, White Point Prod. 1, s. d.
Sigmund, Aransas Pass-Live Oak Oil 3.
———, Rockport Oil 2.
Hattie, San Patricio Dev. 2, s. d.

VALVERDE COUNTY
Rigs
———, Roger Cook 1.
———, Devils River Oil 2.
Drilling
Moore, J. C. Morris 1.
Smith, J. C. Morris 1.
Whitehead, Independent Operators Oil 1.
Whitehead, Havelein Oil 1.
———, Roger Cook 1, s. d.

WHARTON COUNTY
Drilling
Trustee, Gulf Prod. 1, s. d.

SOUTH LOUISIANA
Drilling
Jeff Davis Parish—
Fee, Bissonett & Co. 1.
Calcasieu Parish—
Westlake, Vacuum Oil 1.
Rigs, 37; drilling and shut down, 148; total, 185.

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for September Runs

	Month	Daily Av.
*Prairie Pipe Line Co.	2,430,000	81,000
Gulf Pipe Line Co.	1,509,583	50,319
The Texas Co.	458,524	15,284
Magnolia Pet. Co.	786,580	26,219
Empire Pipe Line Co.	787,241	26 241
Cosden Pipe Line Co.	599,709	19,990
Sinclair Pipe Line Co.	763,611	25,454
*Other lines	6,660,000	222,000
Total September	13,995.248	466.507
Total August	15,485,665	499,538
Difference	1,490,417	33,031

Shipments

†Prairie Pipe Line Co.	2,874,690	95 823
Gulf Pipe Line Co.	1,196,569	39,886
†The Texas Co.	292,518	9,751
Magnolia Pet. Co.	688,632	22,954
Empire Pipe Line Co.	837,947	27,932
Cosden Pipe Line Co.	580,383	19,346
†Sinclair Pipe Line Co.	860,380	28,679
*Other lines	4,850,000	195,000
Total September	13,181 119	439,371
Total August	15,444,598	498,082
Difference	2,263,479	38,711

Stocks

*Prairie Oil & Gas Co.	23,000,000
*Prairie Pipe Line Co.	1,350,000
Gulf Pipe Line Co. and Gypsy Oil Co.	8,685,755
The Texas Co.	7,834,366
Magnolia Pet. Co.	7,588,752
Empire Pipe Line Co.	2,281,848
Cosden Pipe Line Co.	3 485,613
Sinclair Crude Oil Pur. Co.	30,725,000
Carter Oil Co.	16,106,356
*Other lines	4,500,000
Total September	105,557,684
Total August	104,257,688
Difference	1,299,996

*Estimated. †Includes shipments of Texas crude oil.

Note—Stocks do not include approximately 7,000,000 bbls. of crude oil held on private tank farms and leases

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1920	1921	1922	1923
January	56,004	64,460	67,702	75,790
February	68 699	70,054	75,096	71,093
March	67,745	68,555	78,531	76,592
April	64,589	65,036	76,462	75,614
May	63,937	65,466	77,592	77,365
June	68,750	62,438	76,193	77,592
July	66,489	59,486	76,435	71 879
August	62,861	64,888	79,387	76,910
September	68,102	60,110	78,512	72,358
October	65,066	57,688	77,209	.....
November	62,758	58,470	75,313	.....
December	60,976	61,000	73 351	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1920	1921	1922	1923
January	98,835	115,550	119,792	171,067
February	107,146	96,736	111,362	164,219
March	110,777	84,168	127,753	185,487
April	114,090	101,015	127,068	179,751
May	119 219	100,253	127,840	177,102
June	102,598	105,037	137,638	173,598
July	112,340	97,096	137,872	168,380
August	122,296	101,652	153,275	142,766
September	127,131	117,440	158,761	137,266
October	122,891	105,728	165,345	.....
November	117 730	121,803	165,677	.....
December	117,201	104,023	172,861	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1921	1922	1923
January	7,916,353	16,297,858	14,040,567
February	8,721,878	17,009,293	14,028,437
March	9,818 766	16,877,937	13,873,146
April	10,369,941	16,777,842	13,737,575
May	11,224,694	16,948,962	13,816,522
June	12,328,126	16,810,169	14,541,253
July	13 798,698	16,669,286	14,645,584
August	15,155,633	16,235,229	14,770,539
September	15,525,750	16,228,545	14,803,444
October	15,761,079	15,757,746	.....
November	14,971,071	15,171 972	.....
December	15,854,741	14,323.765	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

1922—	Receipts	Shipments	Stocks
September	2,382.56	3.31	20,728.16
October	3,368.58	4,783.61	29,313.13
November	3,052.75	2,230.18	30,135.70
December	3,076.36	1,292.84	31,919.22
1923—			
January	2,798.55	2 461.36	32,256.41
February	2,692.93	932.33	34,017.01
March	2,978.88	12,417.00	24,578.89
April	3,529.12	3,054.09	25,053.92
May	3,538.73	4,856.42	23,736.23
June	2,927.71	4,743.78	21,920.16
July	2,996.64	1,471.57	23,445.23
August	3,199.07	3 769.34	22,874.96
September	2,829.70	5,822.38	19,882.37

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, October 1	2,514,418.31
Runs from well	514,355.38
Other receipts	89,975.51
Regular deliveries	181,647.39
Other deliveries	247,488.89

The amount of Illinois oil run by the Tide Water Pipe Line Co. in September was 28,206.21 barrels, and deliveries were 124,278.01 barrels. Adding these figures to those of the Illinois Pipe Line Co., makes the runs and deliveries from the Illinois Field as follows:

1923—	Runs	Deliveries
September	595,603.99	407,333.79
October	618,459.82	454,005.38
November	566 508.03	434,681.97
December	552,069.33	391,868.37
1923—		
January	599,239.86	470,958.84
February	496,421.79	382,566.83
March	625,906.81	472,520.76
April	521,910.87	423,548.43
May	624,107.98	523,515.00
June	582,511.82	509,137.77
July	594,653.42	489,269.17
August	594,747.94	367,152.82
September	542,661.59	305 925.40

The Tide Water Pipe Co., Ltd., also delivered in September 146,980.99 barrels of Oklahoma oil. The total deliveries of all grades by the Tide Water were 451,871.43 barrels.

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for August and September:

	Aug., '23	Sept., '23
Nat. Transit	206,573.94	188,712.66
S. W. Pa. P. L.	85,306.54	82,300.00
Eureka P. L.	410,033.87	368,672.93
Buckeye P. L. (Macksburg)	275,646.49	250.485.71
Buckeye P. L. (Cleveland)	19,886.44	16,280.77
Buckeye P. L. (Lima, etc.)	147,758.37	139,388.04
Indiana P. L.	16,666.55	14,150.22
Cumberland P. L.	436,995.55	386,752.33
N. Y. Transit	16,732.74	15,261.47
Tide Water P. L.	166,005.41	149,139.68
Pure Oil P. L.	191,968.03	177,281.66
Emery P. L.	34,090.37	31,486.08
Paragon Ref.	.....	.....
Indian Ref.	327 828.64	309,242.57
Swiss P. L.	1,118.94	996.34
Pittsburgh P. L.	9,462.70	8,272.29
Riggs Ref.	6,694.44	.....
Paragon Dev.	31,436.65	32,320.51
Total	2,384,206.70	2,170,742.30
Daily average	76,909.89	72,358.08

Note—Indian Refining Co. also reported other receipts of 87,686.98 bbls. Paragon Refining Co. had other receipts of 133,819.93 bbls. Paragon Development Co. had other receipts of 4,488.53 bbls. Pittsburgh Pipe Line had other receipts of 6,278.70.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for August and September:

	Aug., '23	Sept., '23
Nat. Transit	408,858.25	412,333.27
S. W. Pa. P. L.	294,045.52	261,116.40
Eureka P. L.	118,242.13	130,178.48
Buckeye P. L. (Macksburg)	80,467.88	86,908.91
Buckeye P. L. (Cleveland)	1,819.19	1,066.38
Buckeye P. L. (Lima, etc.)	684,924.31	693,616.91
Indiana P. L.	992,697.12	924,686.09
Cumberland P. L.	170,405.72	160,116.97
Southern P. L.	.....	.....
Crescent P. L.	93,932.06	73,331.96
N. Y. Transit	476,587.89	355,989.97
Northern P. L.	51,021.80	68,794.37
Tide Water P. L.	197,667.70	180,613.45
Pure Oil P. L.	181,150.48	173,186.23
Emery P. L.	35,794.81	31 493.38
Paragon Ref.	163,638.92	114,947.34
Indian Ref.	425,606.11	294,144.15
Swiss P. L.	.....	1,999.86
Fittsburgh P. L.	10,218.76	11,841.66
Riggs Ref.	.....	.....
Paragon Dev.	38,266.83	27,153.27
Total	4,425.745.48	4,017,972.73
Daily average	142,765.98	127,265.70

Gross Stocks

The gross stocks held by various pipe lines in the oil producing section of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of August and September were as follows:

	Aug., '23	Sept., '23
Nat. Transit	1,226,516.82	1,197,343.90
S. W. Pa. P. L.	905,483.30	924,128.91
Eureka P. L.	1,881,858.68	1,934,234.44
Buckeye P. L. (Macksburg)	510,371.43	492,970.70
Buckeye P. L. (Cleveland)	14,727.36	13,414.28
Buckeye P. L. (Lima, etc.)	4,054 312.99	4,214,807.61
Indiana P. L.	612,562.59	681,376.15
Cumberland P. L.	729,182.50	732,274.61
Southern P. L.	986,531.42	955,763.35
Crescent P. L.	73,288.05	78,602.29
N. Y. Transit	2,066,346.44	1,735,579.71
Tide Water P. L.	.....	.....
Northern P. L.	930,881.22	930,869.85
Pure Oil P. L.	288,500.40	293,002.15
Emery P. L.	5,560.54	5 811.39
Paragon Ref.	167,423.69	180,341.45
Indian Ref.	302,234.45	400,841.76
Swiss P. L. Co.	3,363.81	4,482.76
Pittsburgh P. L.	5,866.37	9,171.38
Riggs Ref.	1,141.90	.....
Paragon Dev.	10,384.64	11,121.69
Total	14,770,538.60	14,803,443.87
Increase	124,955.06	32,905.27

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of August and September, showing the gross stocks of the above fields:

	Aug., '23	Sept., '23
Pennsylvania	3 639,614.20	3,601,488.55
Lima	844,117.73	888,303.63
Kentucky	1,978,779.72	1,998,876.17
Mid-Continent	8,958,066.66	7,961,689.79
Illinois	249,960.29	353,184.73
Total	14,770,538.60	14,803,443.87

AVERAGE WEEKLY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Av. bbls. per wk.—	ATLANTIC PORTS						GULF COAST PORTS					
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
July	110,750	18,750	517,000	185,250	121,750	952,500	.....	139,750	.....	.....	139,750	1,092,250
August	116,067	51,709	688,485	222,873	151,970	1,231,104	.....	24,512	219,030	.....	243,542	1,474,646
September	205,600	47,400	516,200	124,200	126,600	1,000,000	.....	140,600	.....	.....	140,600	1,140,600
October	195,000	56,000	626,000	220,000	107,000	1,178,000	.....	208,000	.....	.....	208,000	1,386,000

AVERAGE WEEKLY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Av. bbls. per wk.—	ATLANTIC PORTS						GULF COAST PORTS					
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
May	114,665	128,750	256,500	109 250	153,750	662,915	335,250	227,500	298,500	63,500	924,750	1,587,665
June	62,800	84,200	358,200	153,400	161,800	757,600	301,000	228,400	212,400	45,800	787 600	2,332,000
July	71,750	116,250	451,500	112,000	218,750	970,250	367,750	280,000	208,250	23,000	879,000	1,849,250
August	116,065	89,113	374,613	102,970	197,127	879,888	338,485	266,224	234,388	45,633	1,295 730	2,175,618
September	53,600	113 000	353,200	132,000	149,600	801,400	355,200	279,400	176,000	44,800	714,200	1,656,600
October	91,250	48,000	298,500	134,000	204,000	800,750	247,000	352,500	95,000	125,000	707,000	1,507,750

PRODUCTION BY MONTHS AND DAILY AVERAGE PRODUCTION IN THE U. S. FOR 12 MONTHS

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Wyoming Montana	Other Fields	Totals
1922—										
October:	Month	13,419,432	13,222,151	9,106,994	2,638,875	780,797	2,782,994	2,856,805	3,550,182	48,358,230
	Daily average	432,885	426,521	293,774	85,125	25,187	89,774	92,155	114,522	1,559,943
November:	Month	14,035,537	12,613,560	8,676,000	2,646,091	1 023,450	2,529,150	2,208,800	3,205,290	47,637,878
	Daily average	467,818	,420,452	289,200	85,261	34,115	84,305	96,360	106,483	1,587,929
December:	Month	15,426 810	13,185,416	8,707 931	2,649,200	1,596,500	2,463,291	3,108,866	3,149,445	50,288,159
	Daily average	497,639	425,336	280,901	82,330	51,500	79,461	100,286	101,595	1,622,199
1923—										
January:	Month	16,457,445	13,328,574	8,881,009	2,826,611	2,417,002	2,428,018	3,124,707	3,423,516	52,786,872
	Daily average	530,885	425,817	286,484	91,181	74,742	78,323	100,797	110,436	1 702,802
February:	Month	16,426,759	12,045,020	7,663,992	2,744,660	2,258,984	1,084,008	2,922,192	2,907,340	48,056,955
	Daily average	586,670	444,465	273,714	91,622	80,678	67,286	104,364	104,405	1,716,238
March:	Month	19,608,192	13,955,828	8,462,783	2,847,040	2,970,575	2,312,600	3,274,778	3,464,529	56,896,325
	Daily average	632,525	450,188	272,993	91,840	95,825	74,600	105,638	111,759	1 835,365
April:	Month	20,695,959	14,399,610	8,403,240	2,768,052	2,766,000	2,160,300	3,584,048	3,281,340	58,058,549
	Daily average	689,865	479,987	280,108	89,292	92,200	72,010	116,947	109,378	1,935,295
May:	Month	21,535 365	15,058,782	8,932,000	2,805,750	3,389,000	2,175,000	3,566,600	3,546,400	61,608,897
	Daily average	694,689	505,123	288,129	93,525	109,323	70,161	115,051	114,400	1 987,387
June:	Month	22,667,106	15,572,730	8,817,000	2,797,830	3,078,990	1,981,800	3,385,600	3,401,400	61,702,456
	Daily average	755,570	519,091	293 900	93,261	102,633	66,066	122,853	113,380	2,056,754
July:	Month	25,262,082	15,260,184	10,662,000	2,448,566	2,859,000	2,012,000	4,143,400	2,788,600	65,435,832
	Daily average	814,906	492,264	343,935	78,986	92,226	64,903	133,657	89,955	2 110,833
August:	Month	26 440,005	14,049,076	11,454,000	2,316,320	3,113,000	2,078,000	4,180,000	3,473,300	67,103,701
	Daily average	852,903	453,196	369 484	74,720	100,419	67,032	134,861	112,043	2,164,668
September:	Month	25,762,500	12,812,220	12,287,000	2,234,130	3,350,000	1,855,000	4,449,500	3,262,800	66,013,150
	Daily average	858,750	427,074	409,567	74,471	111,666	61,834	148,317	108,760	2,200,438
	Twelve months	237,737,192	166,113,151	112,053,944	31,727,825	29,503,298	25,862,186	31,505,296	39,454,142	683,947,034
	Total daily average	651,335	455,105	306,997	86,898	80,831	70,855	86,316	108,094	1,874,436

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This process drives aluminum into the metal, producing a heat-resisting, carbon-defying, coke-shedding, corrosion-proof armor. Calorized tubes will withstand 2000° F. in the surrounding gases, carbon cannot penetrate the armor, coke slides over its almost glossy surface, corrosive fumes and fluids are impotent against it.

There is ample evidence to prove that unprotected steel cannot stand up in modern cracking practice. There is just as much evidence to prove that Calorizing will make steel tubes suitable for the job and that the savings are big. They are big enough to merit as much attention as the prices of crude and gasoline. Whatever you pay for crude or get for gasoline, the savings due to Calorizing are well worth securing.

Economize! Modernize! Calorize!

Get the facts and the evidence. They are in "Preventable Losses in Oil Refining," a new book. Complimentary copy gladly sent immediately on request.

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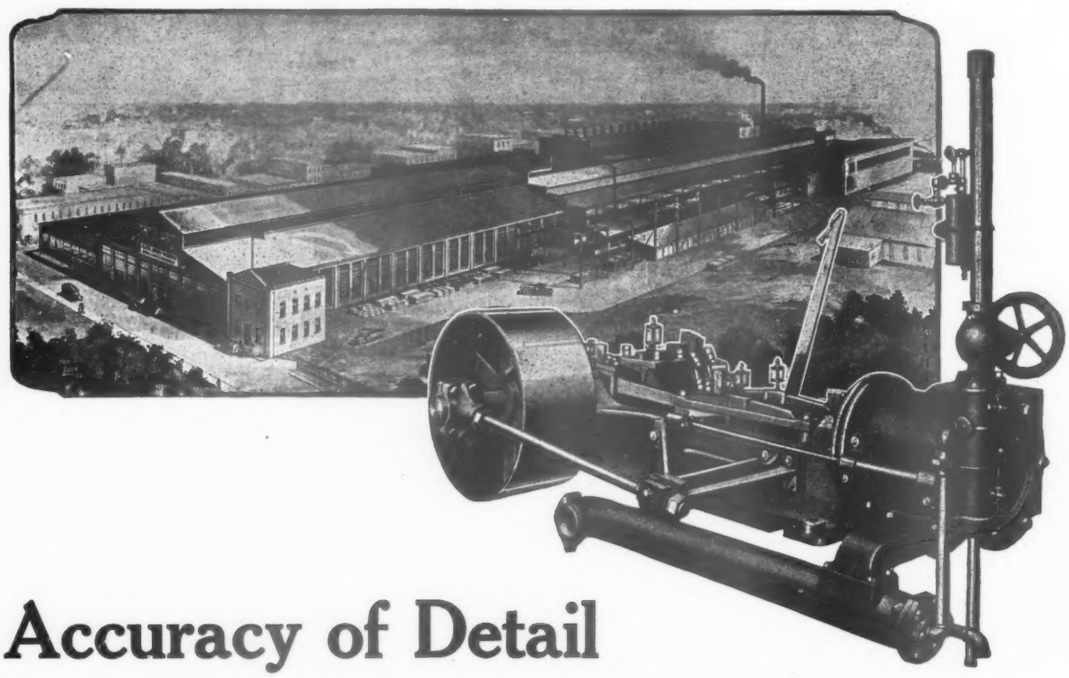

Accuracy of Detail Found in All Ajax Engines

The illustration above shows the factory at Corry, Pa., devoted entirely to the manufacture of Ajax Drilling Engines. It is equipped with the same machines of precision that are used in the finest automobile factories.

Fifty years' experience has shown that Ajax Drilling Engines are better for accuracy of detail, such as the grinding of crankshafts and precision work on all moving parts. Illustration also shows the Engine with the new outboard bearing, an Ajax feature that adds much strength and durability.

AJAX ENGINES

Distributed by the
NATIONAL SUPPLY COMPANIES
in every oil field

Manufactured by the
AJAX IRON WORKS
Corry, Pa.

AJAX DRILLING ENGINES

ONE-HALF BARREL PER STROKE

This pump will do it

It will pump 3,000 barrels every hour at a speed of 25 R. P. M. against 100 lbs. pressure. It has 14″ discharge and 16″ suction flanges.

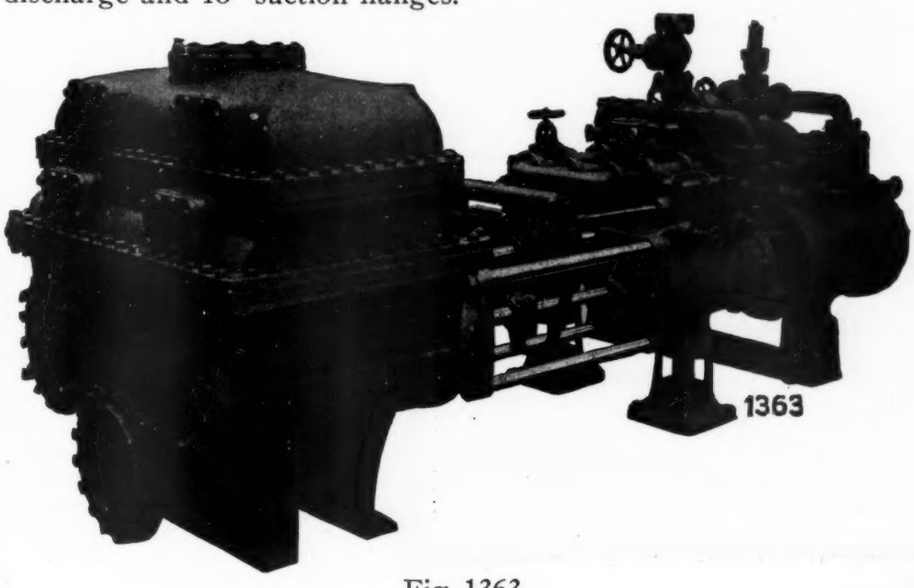

Fig. 1363

TRANSIT 14″, 20″ x 16½″ x 24″ COMPOUND HORIZONTAL DUPLEX SEPARATE CHEST TYPE, with separate valve plates. **PUMP**

Remarkable "Turnaround" records have been made by Standard Tankers using these pumps. On the sea, as a cargo oil pump, and on land as tank pumps, they cannot be beaten.

Tie-bar construction cuts down the weight, and renders the stuffing boxes much more accessible.

Steam ends simple or compound as illustrated.

Your "conditions" will bring a description of the pump best adapted to your work.

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PUMP AND MACHINE COMPANY
OIL CITY, PENNA.

District Offices: New York, Philadelphia, Pittsburgh, Cleveland, Kansas City, Houston and Denver

PERFECTION VAPOR PRESSURE TANKS
WOOD, AND BOLTED STEEL TANKS

Indisputable Evidence—No. 1

H-Y OIL COMPANY, Inc.
405 Mrs. Dan Waggoner Building
Fort Worth, Texas

July 24, 1923.

Black, Siballs & Bryson,
Fort Worth, Texas.
Att: Mr. Grubbs.

My dear Sir:

We have been producing oil for a number of years, and your representatives have attempted many, many times to sell us your Vapor Pressure Perfection Tanks; but we were so thick-headed that they could not convince us of the real merit of your tanks.

In June we purchased one of your flow tanks and two stock tanks. We made well head tests of the gravity of our oil, and we are frank to state to you the test in our tanks was held well head tests and probably just a fraction better.

We have no evaporation in your tank, and the other regular tanks, we are having one inch in 24 hours on 250-barrel tanks; therefore, it is a great pleasure to us to say something in regard to the real merit of your tanks. We feel that a producer is making a great mistake in not installing Perfection Tanks.

We also believe that within twelve months' time; we will save enough in evaporation and on the gravity of our oil to more than pay for the tanks.

Yours very truly,
H-Y OIL COMPANY, Inc.,

J. R. Hill President.

JRH-F

"A producer is making a great mistake in not installing Perfection Tanks."

You too can avoid the ravages of evaporation by installation of Perfection Vapor Pressure Tanks.

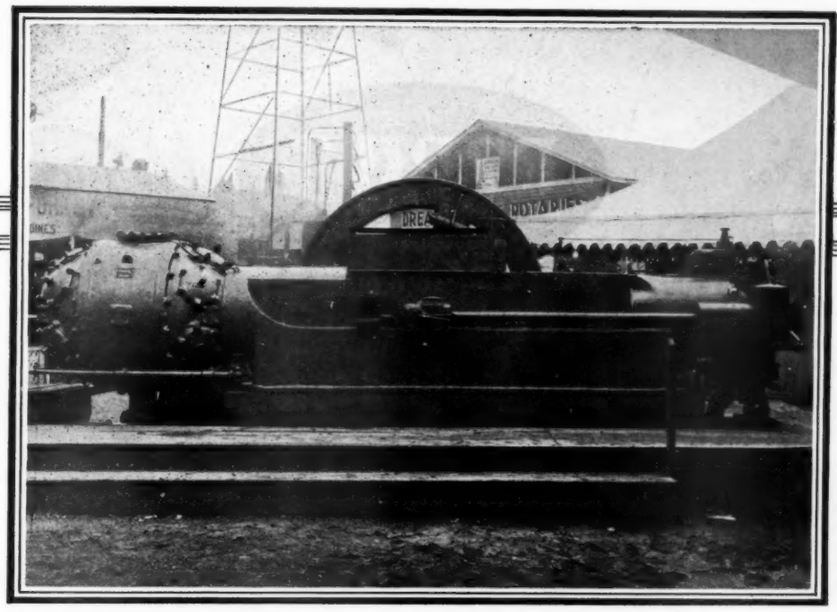
For as the H-Y Oil Company points out, procrastination is a great mistake. It costs real money.

Think of the satisfaction in knowing your Perfection battery will pay for itself in a year's time at the most.

Get in touch today with our branch representative in your field.

Black Sivalls & Bryson
INC.
BARTLESVILLE ~ OKLAHOMA

Branch offices in all principal active fields



THE YOUNGSTER'S NEARLY FIVE AND NOW LOOK AT HIM

The Cooper single acting gas engine in 80 and 160 H. P. sizes has been serving the oil and gas fields for almost five years. Like a youngster in the family, the first few months of its existence were not easy ones for us. There were those who prophesied failure, but the youngster lived, and constantly grew in favor with oil and gas men. During the season just completed it has been selected for the great majority of larger compressor installations from coast to coast. Do you ask, "Why this success?" We will mention just a few possible reasons.

It had a rich heritage—designed and built by an organization with 90 years experience in the manufacture of machinery, preceded by a line of large double acting gas engines, which is now the country's standard for large compressor units. This smaller Cooper was no experiment.

It was designed and built to meet the conditions of a very special field which demanded an engine of rugged simplicity, and of greater fuel economy. That is why it is a single acting engine with no rod-packing or piston-water troubles. Although the necessity for greater fuel economy demanded a four-cycle engine, the simple and accessible outside valve gear soon made it a favorite with the operators away out in the wilds, miles from a warehouse. This youngest Cooper product is maintaining the reputation of its predecessors.

Cooper Gas Engines and Compressors are built in standard sizes from 80 to 1300 B.H.P. for every power purpose.

F-441

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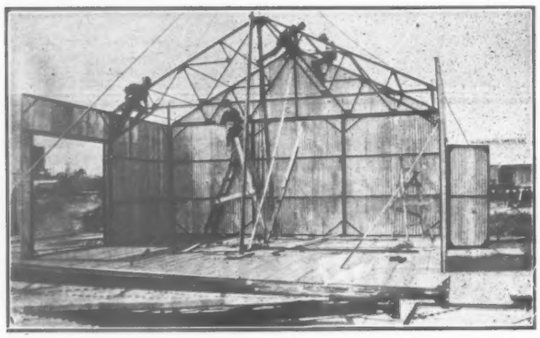

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If there is an International catalogue on your desk, don't overlook the fact that our old name—Oklahoma Tool & Supply Co.—is on the cover.

If you don't have this big, profusely illustrated and complete listing of standard oil equipment we will be pleased to forward one on your request.

While describing and illustrating equipment necessary to the oil industry, unfortunately, this book cannot picture the kind of service that is back of the equipment listed—a service that in every way measures up to the very highest for quality of merchandise, speed of delivery and courtesy of store managers and employees, all a very important part of what we deliver with your order.

International Supply Company

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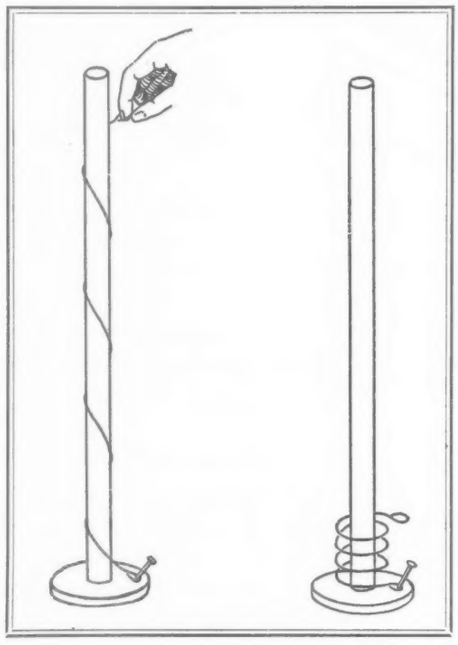
GRIPS LIKE A SCREW

Why Diameter Increases

The diagrams below clearly indicate WHY the Guiberson-Crowell Plug's diameter increases as the plug is collapsed in the well.



This lateral expansion causes the edges of the spirals to bite into the walls of the well. The grip secured is thus "meshed" like that of a screw. It is not surprising that this plug has held, time after time, where others fail.

Fully Patented

THE GUIBERSON CORPORATION

Box 1106, Dallas, Texas

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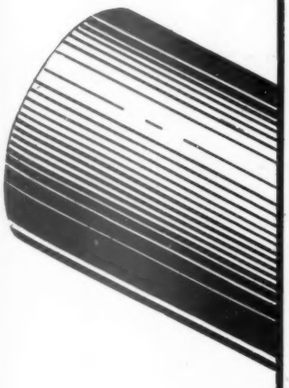
GUIBERSON

BETTER BE SAFE THAN SORRY

What Does It Cost To Drop A String of Tubing ?

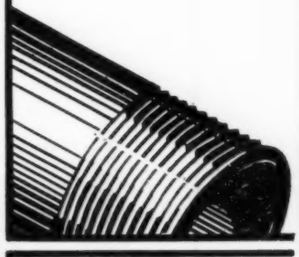


The price of steel pipe is less than that of genuine wrought iron.

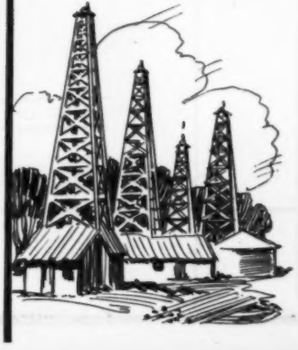
But what has the price to do with the cost when you drop a string of tubing ?

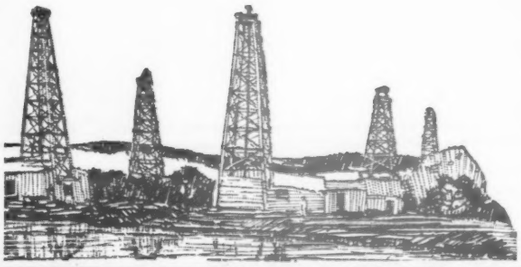
READING IRON COMPANY
READING, PENNA.

Oil Well Supply Co., Distributors



READING
GUARANTEED GENUINE
WROUGHT IRON PIPE





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They will deliver many years of the hardest kind of service.

"IDECO" Band wheels are sturdy, smooth-running, INTERNATIONAL-ly engineered pieces of oil field equipment—not merely a band wheel with a few minor improvements over the crude, old-fashioned type.

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"IDECO" Band Wheels are made in diameters of 10 and 11 ft., with steel or wood tug rims. Any standard size shaft furnished on specification.

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The Right Pole
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GIVE more thought to the choice of poles for the outside plant. Maintenance costs—depreciation charges and character of service depend directly on how well or how poorly the poles stand up in service. In the long run—the pole that lasts longest is least expensive. Rotting poles are a continual source of trouble and expense—they become a liability, whereas International Creosoted Pine Poles remain a standing asset.
Service records, in all parts of the country, in all classes of service, have shown convincingly that International Creosoted Pine Poles are more economical and are rapidly replacing poles of other species because—
They resist decay, are more durable and last longer.
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Their longer life decreases maintenance expense and the yearly amortization charges.
High grade poles are available quickly at reasonable cost from the International Plants. Just designate lengths, top diameters, number and spacing of gains and treatment desired.
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Genera Office—Galveston, Texas
Plants - Texarkana, Texas Beaumont, Texas Galveston, Texas
The pole that lasts longest is least expensive

Made for the Trade

When we speak of the new Turbine-Generator Rig Lighting Unit as being "made for the trade" and designed to afford "simplicity, safety, economy and reliability," you'll probably remark "That's what they all say."

No doubt your suspicions are justified. 'Matter of fact, we are mighty pleased to have you analyze our statements. It brings out the "fine points" of the new Westinghouse Rig Lighter. In other words, you "sell" yourself.

Simplicity

We've left out the trimmings and given you the Rig Lighter. Only five main castings are used, and only one of these supports the Unit. Any possibility of distortion either from bolting down or temperature changes is avoided because only one bearing is secured. It is carried by the one main casting which supports the Unit.

Safety

This Unit has been said to lead "a charmed life." The fly ball governor and expanding rotary rim prevent the possibility of a runaway. Likelihood of injury to the operator or the Unit as a result of careless handling is avoided because all working parts are covered.

Economy

You might call this Unit "thrifty." The steam is shot through the buckets twice. This saving is effected through a special design of the nozzle and the reversing chamber.

Reliability

You can "bank on" the new Westinghouse Turbine-Generator Rig Lighting Unit to "stay put." One look at this rig lighter gives you the feeling that here is an outfit whose rugged construction almost invites abuse.

One more thing—Westinghouse service only begins with the sale. Our engineers and representatives are eager to help you on any of your perplexing problems at all times.

Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pennsylvania

See Your Dealer

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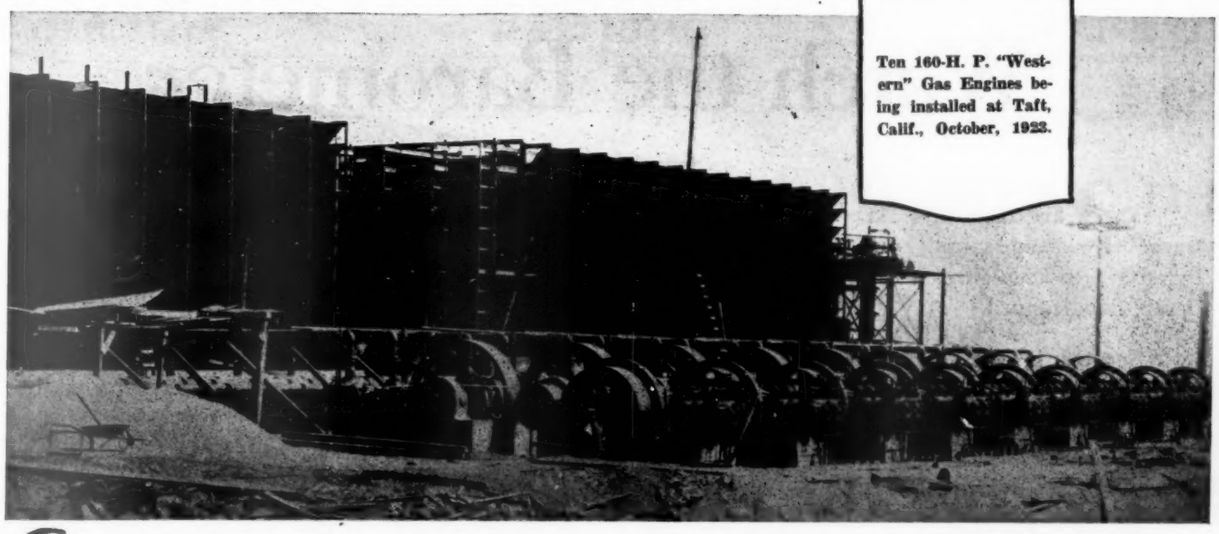

Ten 160-H. P. "Western" Gas Engines being installed at Taft, Calif., October, 1923.

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